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ABSTRACT

Maintaining a balance among theory, research, and effective classroom practice without presenting a formulaic view of good instruction or overly theoretical discussions in which practical applications of research findings are not adequately explored, the 17 chapters in this book capture the best evidence-based thinking of experienced researchers and teacher educators. Chapter topics in this third edition have been updated and added to reflect current thinking. After an introduction entitled, "There Is More to Effective Reading Instruction Than Research" (Alan E. Farstrup), chapters in the book are (1) "What Reading Research Says: The Promises and Limitations of Applying Research to Reading Education" (Timothy Shanahan); (2) "Holistic, Integrated Approaches to Reading and Language Arts Instruction: The Constructivist Framework of an Instructional Theory" (Brian Cambourne); (3) "Home and School Together: Helping Beginning Readers Succeed" (Jeanne R. Paratore); (4) "The Importance of Effective Early Intervention" (Dorothy S. Strickland); (5) "What We Know about How To Teach Phonics" (Patricia M. Cunningham and James W. Cunningham); (6) "The Role of Phonemic Awareness in Learning To Read" (Linnea C. Ehri and Simone R. Nunes); (7) "The Place of Word Consciousness in a Research-Based Vocabulary Program" (Michael F. Graves and Susan M. Watts-Taffe); (8) "Reading Fluency: Its Development and Assessment" (S. Jay Samuels); (9) "Making a Difference in Adolescents' School Lives: Visible and Invisible Aspects of Content Area Reading" (Richard T. Vacca); (10) "Effective Practices for Developing Reading Comprehension" (Nell K. Duke and P. David Pearson); (11) "Reading Comprehension Strategies and Teacher Preparation" (Joanna P. Williams); (12) "Research on Reading/Learning Disability Interventions" (Richard L. Allington); (13) "Metacognition and Self-Regulated Comprehension" (Michael Pressley); (14) "The New Literacies: Research on Reading Instruction with the Internet" (Donald J. Leu, Jr.); (15) "Standards, Assessments, and Text Difficulty" (Elfrieda H. Hiebert); (16)

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"Preparing Students for High-Stakes Test Taking in Reading" (John T. Guthrie); and (17) "Multicultural Factors and the Effective Instruction of Students of Diverse Backgrounds" (Kathryn H. Au). Author and subject indexes are included. (Individual chapters contain references.) (RS)

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What Research Has to Say About
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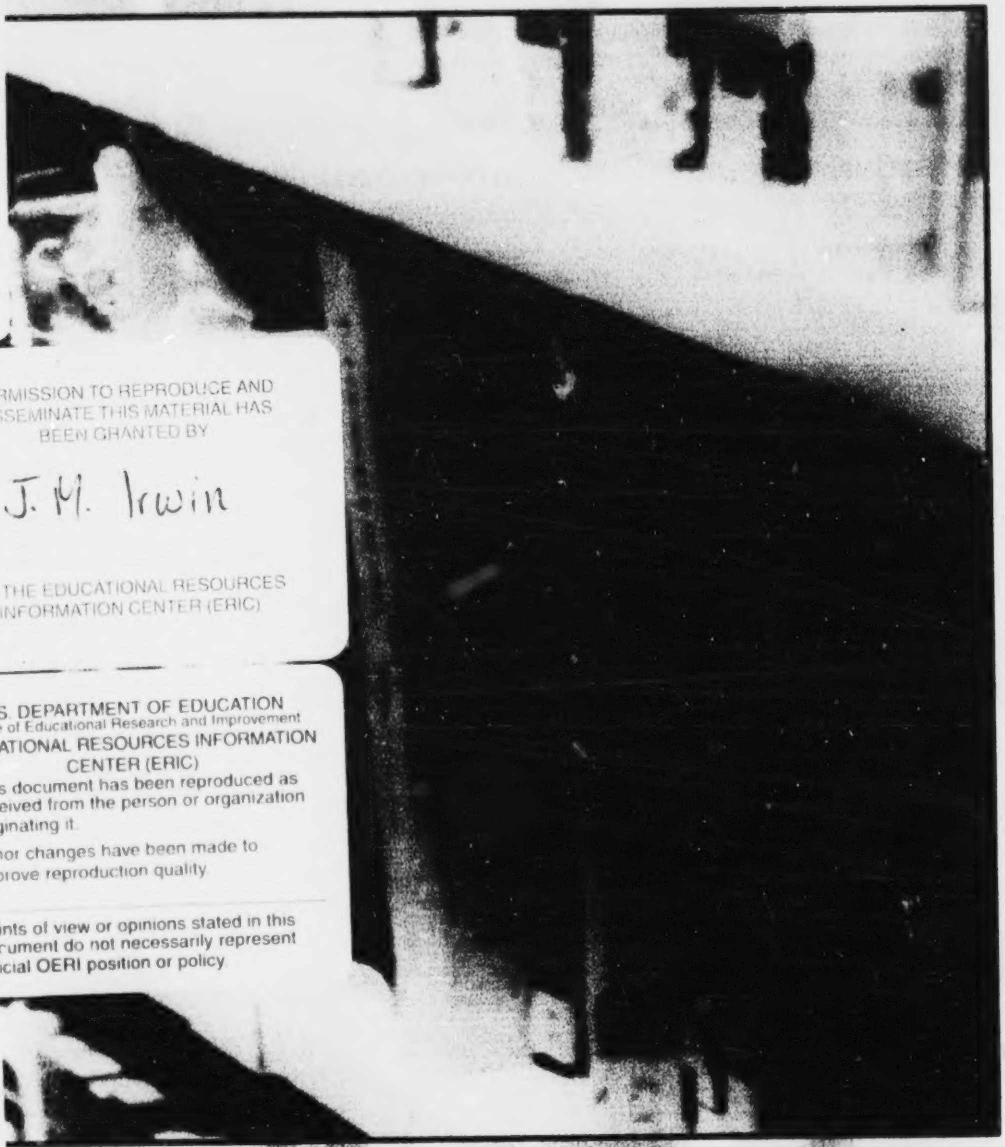

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THIRD EDITION

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What Research Has to Say About Reading Instruction

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3

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Contents

Note From the Editors v

Contributors vii

Introduction
There Is More to Effective Reading Instruction Than Research 1
Alan E. Farstrup

Chapter 1
What Reading Research Says: The Promises and Limitations of Applying Research to Reading Education 8
Timothy Shanahan

Chapter 2
Holistic, Integrated Approaches to Reading and Language Arts Instruction: The Constructivist Framework of an Instructional Theory 25
Brian Cambourne

Chapter 3
Home and School Together: Helping Beginning Readers Succeed 48
Jeanne R. Paratore

Chapter 4
The Importance of Effective Early Intervention 69
Dorothy S. Strickland

Chapter 5
What We Know About How to Teach Phonics 87
Patricia M. Cunningham and James W. Cunningham

Chapter 6
The Role of Phonemic Awareness in Learning to Read 110
Linnea C. Ehri and Simone R. Nunes

Chapter 7
The Place of Word Consciousness in a Research-Based Vocabulary Program 140
Michael F. Graves and Susan M. Watts-Taffe

Chapter 8
Reading Fluency: Its Development and Assessment 166
S. Jay Samuels

Chapter 9
Making a Difference in Adolescents' School Lives: Visible and Invisible Aspects of Content Area Reading 184
Richard T. Vacca

Chapter 10
Effective Practices for Developing Reading Comprehension 205
Nell K. Duke and P. David Pearson

Chapter 11
Reading Comprehension Strategies and Teacher Preparation 243
Joanna P. Williams

Chapter 12
Research on Reading/Learning Disability Interventions 261
Richard L. Allington

Chapter 13
Metacognition and Self-Regulated Comprehension 291
Michael Pressley

Chapter 14
The New Literacies: Research on Reading Instruction With the Internet 310
Donald J. Leu, Jr.

Chapter 15
Standards, Assessments, and Text Difficulty 337
Elfrieda H. Hiebert

Chapter 16
Preparing Students for High-Stakes Test Taking in Reading 370
John T. Guthrie

Chapter 17
Multicultural Factors and the Effective Instruction of Students of Diverse Backgrounds 392
Kathryn H. Au

Author Index 415

Subject Index 427

Note From the Editors

This is the third edition of *What Research Has to Say About Reading Instruction*. As has been the case with previous editions, this new edition strives to maintain a balance among theory, basic research, and effective classroom practice while bringing together findings and insights gleaned from the most current research and policy work in the area of reading. The collection represents a range of research and instructional perspectives.

The original volume was an outgrowth of an idea put forth by Constance McCullough, president of the International Reading Association in 1974–1975. Prior to her term as president, McCullough had observed that many of the papers given at Association annual conventions were either overly prescriptive or overly theoretical. In organizing the program for the 1975 Annual Convention, McCullough focused on papers that offered a balance between theory and practical application. These papers, along with several others, became the first edition of *What Research Has to Say About Reading Instruction*, published in 1978.

This third edition is consistent with McCullough's original vision, in that it does not present a highly prescriptive or formulaic view of good instructional practice, nor does it present an overly theoretical discussion in which practical applications of research findings are not adequately explored. This volume is meant to capture the best evidence-based thinking of experienced researchers and teacher educators.

Chapter topics in this third edition have been updated and added to reflect current thinking. The topics included focus strongly on research related to early reading instruction, phonemic awareness, fluency, and comprehension. These are topics that have come to national and international attention for a number of reasons, including the U.S. National Reading Panel report released in 2000. We feel it is important to address these research matters because they have been the focus of so much professional and public discussion and debate.

A chapter on literacy, literature, and constructivist-based approaches to reading and language arts instruction has been included. We feel this expanded focus more adequately addresses not only the important contributions of the whole language movement, but also the broad issues of research related to literature-based instruction and the role of constructivist theory and practice in good language arts instruction.

A specific chapter in vocabulary development has been included, as well as one dealing with fluency. These chapters reflect recent research emphases and provide teachers and school districts with information they need to implement best practices as well as current reading policy and legislation in the United States.

Other chapters address the areas of content area reading and reading comprehension. A chapter has been added addressing technology and reading instruction. In addition, the focus on assessment has been expanded to include a chapter on literacy assessment as well as a chapter about preparing students for high-stakes test taking. A chapter on multicultural factors in reading has been included to provide additional attention to this important topic.

A new feature to this edition is the inclusion of Questions for Discussion offered at the close of each chapter. They are intended to encourage further reflection and understanding on the part of individual readers as well as groups of students preparing for careers in the teaching profession.

We intend this book to be used in preservice teacher preparation courses as well as graduate-level courses. We also expect that it will be a useful tool for the professional development community and for school administrators and policymakers as they seek to implement programs consistent with rapidly emerging legislative and policy mandates.

It is hoped that readers of this book will encounter new perceptions that will deepen their understanding of the underlying reading process while, at the same time, expanding their insights about effective instructional practices, practices based on a solid knowledge of accepted theory and research evidence about the reading process.

AEF, SJS

Jean S. Chall
1921–1999

It is with a profound sadness that we acknowledge the death of Jean Chall, Professor Emerita at the Harvard Graduate School of Education. For more than 50 years, Chall's research and writings had a major impact on the field of reading. In her 1967 book, *Learning to Read: The Great Debate*, she reviewed and summarized the published research on meaning-focused versus phonics-focused approaches to reading, and concluded that phonics provided the better start for early reading. Chall defended this position despite criticism as the pendulum shifted and other approaches became more fashionable. If she were alive today, she would be pleased to know that the National Reading Panel report came to the same conclusion that she reached more than 30 years ago.

Chall contributed beautifully written chapters on reading and learning disabilities to the first and second editions of *What Research Has to Say About Reading Instruction*, but was too ill to contribute her expertise to this edition. As a community of scholars and teachers of reading, we will miss Jean Chall.

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9

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Introduction

There Is More to Effective Reading Instruction Than Research

Alan E. Farstrup

> Every child deserves excellent reading teachers because teachers make a difference in children's reading achievement and motivation to read. (International Reading Association, 2000)

The assertion that there is more to effective reading instruction than research may seem out of place in the context of a book dedicated to the illumination of what research says about reading instruction. However, it is important to recognize that reading instruction, in its finest form, contains components of both art and science. The art of teaching represents the very human, insightful aspect of the enterprise. The science of the learning-to-read process forms a necessary foundation and knowledge base for the enterprise that is effective teaching. The art of teaching is rooted in the experience, skill, judgment, and intuition of the teacher dedicated to the best interests of the students he or she serves, while the scientific knowledge revealed by effective, contextually relevant research forms the rational knowledge base for instructional decisions.

The authors of this volume clearly reflect and emphasize the importance of solid research evidence—the science of teaching and learning—as well as a deep and abiding respect for the skill, intuition, and dedication of the excellent and artful reading teacher.

Improvement of reading instruction through thoughtful application of research evidence about the learning-to-read process is a worthy goal. Reading research done in light of a complete understanding of the classroom and school context can and does provide educators with valuable guidance about effective instructional practice. We must not, however, undervalue the professional experience and judgment of highly educated, excellent teachers. Qualified and talented teachers are essential if effective, evidence-based reading instruction is to occur. Teaching is more than a technical process; it is a complex human process in which the teacher's knowledge of the reading and learning processes intersects with his or her knowledge of the needs, interests, and individual characteristics of learners.

The research and policy literature of the past several decades is filled with commentary about the importance of reading, the importance of evidence, the importance of excellent teachers, and the importance of effective schools. Much of the basic reading research done during the past 50 years has focused on language and cognitive processes. These studies have added greatly to our understanding of how we learn to read and how we comprehend what we read.

The importance of the teacher in the learning-to-read process was highlighted by the landmark First-Grade Studies (Bond & Dykstra, 1967), U.S. federally funded cooperative studies of methods and materials in first-grade reading instruction. A primary finding of the First-Grade Studies was that the teacher was a variable underlying student success in learning to read. No single method or specialized technique of reading instruction emerged as superior. These findings have not been refuted during the decades of study that have followed even though we now have a much more complete understanding of the language and learning processes that support good reading instruction. The contributors to this volume make the case that the excellent teacher needs to be supported by a strong knowledge of reading research and theory. Observational as well as experimental research findings contribute to the teacher's necessary knowledge base.

Numerous reports about reading instruction and the need for evidence-based instruction have been issued over the years. Many of these studies have focused on education policy and effectiveness of the public education system. In 1983, a landmark policy report was issued by the National Commission on Excellence in Education. *A Nation at Risk: The Imperative for Educational Reform* set out to document the characteristics and perceived inadequacies of the public education system in the United States. Public education was taken to task for failing to meet the needs of too many students and for failing to produce the kinds of achievement gains deemed vital by the authors of the report. Many would argue that *A Nation at Risk* and similar reports have had the effect of turning generally positive public attitudes toward public education and teachers negative. Such reports have established an essentially critical public and policy context wherein public education in the United States is increasingly seen as dysfunctional and in need of complete reform, or even replacement by private, profit-making entities. The basic notion of a common, public education has been placed in jeopardy.

In spite of repeated reform efforts and the existence of data that demonstrate the overall success of public schools, it is clear that many students, especially minority and poor children, fail to succeed. Hence, an atmosphere essentially hostile toward public education, teachers, and teacher educators still exists in many quarters. Frequently in legislative and policy circles, schools and teachers are now seen as the problem and not the solution to improved reading achievement for all students. This perception has led to an increasing tendency to legislatively mandate educational practices in an effort to improve the quality of education through regulation. Experienced educators have long been concerned about the increasing incidence of government mandates being imposed on schools and teachers. These mandates often impose standards-based approaches to curriculum and instruction as well as proliferating programs for the assessment of student achievement. These mandates too often do not take into account the needs of learners or the experience of teachers and other professionals who must implement them.

The nature of legislative and policy mandates has undergone significant change during the past 15 years. During the latter half of the 20th century, the focus of lawmaking and regulatory policy was primarily related to educational equity and the importance of equal access for all children to public educational opportunities. In the mid-1980s, this focus on equity, on the civil rights aspects of public education, changed. Increasingly the focus shifted to the issue of educational quality. A core question frequently asked now by lawmakers and the public is, "How good is the education our children receive and what can we do to improve its quality?"

The focus on quality and achievement brings with it a focus on instructional practice. The previous emphasis on equity and opportunity resulted in a very different set of questions and concerns. With the emergence of issues of quality have come calls for "scientific" research evidence to support legislative mandates. Increasingly, laws have been passed requiring the application of research findings in the classroom, and the imposition of assessment programs to show whether or not quality outcomes are being achieved. A growing emphasis on accountability has arisen as one important result of the shift of political emphasis from equity to high-quality educational outcomes. Achievement as well as equity are now in the policymaking spotlight. For the U.S. federal government this is a relatively new priority because it has historically been reluctant to interfere with instructional matters in deference to traditional local control of education. This reluctance is rapidly fading as federal actions increasingly focus on instruction and on student achievement.

There have been many positive outcomes resulting from policy reports such as *A Nation At Risk*. Educators and researchers have been stimulated to examine their own practices and policies and to consider how best to support real change and improvement as schools become increasingly diverse and as challenges to traditional teaching methods and approaches arise.

In 1985, the National Academy of Education, the National Institute of Education, and the Center for the Study of Reading at the University of Illinois issued yet another in a series of important research and policy reports. This report, *Becoming a Nation of Readers: The Report of the Commission on Reading* (Anderson, Hiebert, Scott, & Wilkinson, 1985), came in response to the ongoing discussion in the United States on how to improve schools and reading instruction. It points out that a growing body of research has resulted in an improved understanding of how we read, use language, and comprehend the information we receive through reading. *Becoming a Nation of Readers* synthesized and interpreted three broad areas of research inquiry: research on human cognition, environmental influences, and studies of classroom practices. In many ways it foreshadowed the later work of the U.S. National Research Council and its 1998 report *Preventing Reading Difficulties in Young Children* (Snow, Burns, & Griffin, 1998) as well as the subsequent, Congressionally mandated report of the National Reading Panel (NRP), *Teaching Children to Read*, issued in the spring of 2000.

Becoming a Nation of Readers brought together the knowledge and experience of researchers and educators and set the stage for much of the research and policy work that followed. It is useful to view subsequent findings issued at the end of the 20th century and the beginning of the 21st century in light of one of the major conclusions in this report:

> Based on what we now know, it is incorrect to suppose that there is a simple or single step which, if taken correctly, will immediately allow a child to read. Becoming a skilled reader is a journey that involves many steps. Strengthening any one element yields small gains. For large gains, many elements must be in place. (p. 4)

This comprehensive and balanced vision, which sets forth a broad context for the examination of reading research and practice, needs to be kept in mind as we view and consider more recent research and policy reports. As debate about good reading instruction has intensified, so has the competition for attention and for commercial gain. Many commentators and marketers speak out in favor of particular approaches that are touted as all-encompassing solutions to the perceived reading problems in the United States. The contributors to this third edition of *What Research Has to Say About Reading Instruction* have taken a much broader view, examining the many elements that must be in place for effective reading instruction to be realized, and pointing out the research evidence and contexts of schooling that support their conclusions.

The NRP report *Teaching Children to Read* (2000) has had a major impact on legislation and on education policy. It was issued as a result of a mandate from the U.S. Congress, a mandate with the purpose of providing an evidence-based assessment of the scientific research and literature on reading and its implications for reading instruction. The report has frequently been characterized as a narrow interpretation of the scientific research on reading. Yet, when the complete technical report and the reports of the subgroups are examined, it is clear that a rather broad range of research dealing with reading instruction and achievement was, in fact, considered. The Panel reviewed extensive public and academic data sources for the purpose of identifying research previously conducted on the learning-to-read process. There has been heated debate surrounding the definitions and criteria used by the Panel to select and interpret the specific sets of studies it considered. Critics argue that too many studies and research approaches were excluded from consideration and that the findings are therefore biased. The Panel, through a series of public hearings, attempted to gather information about public needs and the more general understandings of reading research findings. The NRP also sought to consult with major academic and education organizations with an interest in reading. Whether this process was successful continues to be argued.

The NRP report is organized around five major topics: alphabetics, fluency, comprehension, teacher education for reading instruction, and computer technology and reading instruction. For many reasons the section on alphabetics, including phonemic awareness and phonics, has been the most widely cited and debated. Readers interested in the NRP report are cautioned to read not only the executive summary, a 33-page interpretation of the larger technical report, but also to carefully review the complete technical report consisting of the reports of the topic subgroups where more extensive treatments of the research reviewed and the findings derived can be found. Taken together, all five areas of study represent a broad overview of the learning-to-read process. The findings should be critically considered in this larger context.

The NRP report, while it contributes to our understanding of reading and related language processes, also points out numerous areas in which additional research is needed. It also must be understood that the NRP is not the only source of competent research and theory about reading. For a complete understanding of reading processes and issues, it is vital that a wide range of research and policy literature be reviewed. The various chapters of this book provide valuable insights, as do books and articles from writers and researchers such as Adams (1994); Berliner and Biddle (1995); Ruddell, Ruddell, and Singer (1994); and many others.

The references and suggested readings that follow direct readers to articles, studies, and reports cited here and to others typical of the professional literature dealing with both the art and the science of teaching reading. That there is much more to effective reading instruction than research will be clear to most students of the learning-to-read process when these reports and studies are considered. Effective and comprehensive reading instruction is about numerous intertwined factors. It is about excellent teachers, policy, politics, research, and the real and pressing needs of an increasingly diverse and complex population of students—students who deserve the very best education we have to offer.

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Chapter 1

What Reading Research Says: The Promises and Limitations of Applying Research to Reading Education

Timothy Shanahan

It was a Thursday afternoon, and I was visiting a principal and a small group of teachers at a local elementary school. A teacher asked what the research had to say about a particular instructional program. I explained that the National Reading Panel (NRP) (2000) had found only a few weak studies, and that these were the work of the company that marketed the program. The teachers reddened in anger as they said that they were required to use this program because it was "research based."

Reading has been marked by controversy in U.S. education for the past decade. Arguments about whole language, phonics, and the best way to teach children to read have been epidemic. U.S. President George W. Bush promised during his campaign to improve reading achievement, as did several recent gubernatorial candidates around the United States; Bill Clinton devoted a major section of his 1999 State of the Union to this subject; and virtually every major newspaper or newsmagazine has written about the so-called "reading wars." These debates have become the focus of public legislation (Reading Excellence Act), as well as professional concern (Kamil, 1995; Taylor, 1998). These contentious arguments have stimulated renewed interest in applying research to educational decision making in reading. Public and professional voices seek a final arbiter, and research is often held out as the ultimate determiner of which side is right. No program is seemingly safe without the imprimatur *research based*, although this term has no consistent meaning in education.

As a reading researcher, I am frequently asked what "research has to say" about some issue or other. Along with the perennial questions from school superintendents, principals, and teachers, now the requests come from other quarters, too. For instance, the North Central Regional Educational Laboratory asked that Rebecca Barr and I review the research on Reading Recovery so that state policymakers in the region could make sound funding decisions (Shanahan & Barr, 1995). The editors of *Reading Research Quarterly* asked that Susan Neuman and I identify the research studies that have most influenced reading education over the past 35 years (Shanahan & Neuman, 1997). A U.S. Senate committee asked that I provide testimony on what research says about the role of professional development in reading success. More recently, the U.S. Congress directed the National Institute of Child Health and Human Development (NICHD) to appoint a panel to review reading research to determine what practitioners and policymakers should be doing, and these reviews are helping determine which programs receive federal funding; I served on that panel. Of course, I am not the only researcher who is asked "what the research says," so you can multiply my experiences more than a hundredfold.

There are not only lots of requests; there are lots of answers, too. The Center for the Improvement of Early Reading Achievement (CIERA) (1998), when it was barely under way with its own agenda of studies, weighed in with what research has to say about beginning reading instruction as if it were already a settled question. The NICHD has been getting lots of press for the "research answers" that its director has claimed to provide, and the National Research Council issued a report that tells what research says about the prevention of reading difficulties (Snow, Burns, & Griffin, 1998). Lots of people very much want to know what research has to say, and many researchers seem quite intent on telling them; this is seemingly a perfect match.

I want to add a word of caution here, however. When people want to do something in the worst possible way, they often accomplish just that. In our ardor to apply research findings to reading, we can make things worse rather than better. Too often, when we consider what the research says, we systematically ignore and misinterpret the meaning of research evidence. I am hopefully cautionary in that I, too, believe that research can and should inform sound reading instruction *if it is properly applied.*

If so many people want to know what research says, and if so many researchers want to tell them, why is research so poorly applied in education? Well, of course, it is not that simple. Not all practitioners want to know what research has to say. Some people believe that they have been misled or confused by studies, that researchers do not know as much about teaching as they do, and that the research is not clear or accessible. Even if research showed that their practices were harming students, these educators would not necessarily want to change. They would not trust the results.

Moreover, not all researchers are interested in whether their research is used by practitioners—although some are far too concerned. Many researchers are more interested in participating in intellectual exchanges within the research community than in communicating with practitioners and policymakers. Conversely, some of those who are particularly determined to have their research used are, unfortunately, those who have something to sell (Walberg & Greenberg, 1998). They hope not to help practitioners use research to think about practice, but rather to sell a "research-based" program (whatever that term actually means). Even when researchers and practitioners want to communicate—when their motives are pure—it is still difficult. Practitioners and researchers have different conceptions about what research is, how research should be read, and how it should be used. In this chapter, I will consider some of these differences and offer guidance in how research may best be used to improve educational practice.

What Is Research?

Research is an attempt to understand something better through the systematic and formal collection and analysis of empirical data. There are three basic types of studies—description, correlation, and experiment—and these can be conducted using methods drawn from a variety of disciplinary fields (anthropology, psychology, sociology, and so on). Each of these types of studies has logic and methods that must be considered when applying the findings to practice.

Descriptive studies attempt to describe or enumerate a phenomenon to show or summarize its current nature. How often are the main characters in children's books male? Do the male characters show agency more often than the female characters? Questions such as these can be answered through the identification of an appropriate collection of books and counting the examples. Descriptive research includes studies that summarize classroom practices. This includes descriptions of how teachers manage their classrooms (Edelsky, Draper, & Smith, 1983), the number of minutes per day that are spent on language arts instruction (Baumann, Hoffman, Duffy-Hester, & Ro, 2000), or how often teachers ask certain types of questions during reading lessons (Durkin, 1978/1979). Descriptive research often uses surveys, questionnaires, and observational instruments, and such studies usually take place without any research intervention. That is, the researchers try to summarize the phenomenon accurately without changing it in any way.

Correlational studies, conversely, attempt to make sense of the nature and magnitude of relationships that exist among variables. Such studies seek patterns in the co-occurrence of two or more variables. When students make an oral reading miscue, are teachers more likely to respond with a meaning cue or an alphabetic one? Does it matter what kind of miscue the student made? That is, how do teacher responses correlate with student miscues? Do boys like books with male characters better than books with female characters? Do teachers who devote lots of time to language arts instruction end up with the highest reading achievement? Correlational studies may be statistical, allowing for some measurement of the degree of relationship between the variables. However, ethnographic studies look for correlations, too, although they rarely employ statistics. In ethnography, the observer carefully looks for patterns among the behaviors, cultural practices, and language use of the classroom participants, and he or she makes the connections on the basis of repeated observations. As with descriptive studies, the researcher usually tries to measure or describe correlations or relationships rather than alter them in some way.

Finally, researchers may experiment. This means that they intervene in regular practice in some way, and through this intervention they hope to alter some outcome. What if we get a group of teachers to teach phonemic awareness? What if they use this method instead of that method? What if we reduce class sizes? The researcher could, in each of these cases, take measurements, alter the practices of some of the teachers or students, and then take additional outcome measurements to see what happened and to compare the results with those of the classes that did not have the intervention.

Studies tend to fall into these three categories, although it is possible to combine them in various ways. What they all have in common is that they require careful collection and analysis of data.

It is important to recognize the different types of studies, as this, in part, will determine what kinds of questions can be answered and how the findings should be applied. If you want to know whether a program would work in your school, you would most likely want experimental studies. That is, you would want to know if there are studies that show what happens when schools like yours adopted a particular approach. However, if you wanted to know how teachers and students of different races interact with one another, descriptive studies would probably be more appropriate.

Frequently, the arguments or confusion over what is truly research based turns on the distinctions among these three types of studies. For example, Michael Pressley and his colleagues have provided rich descriptions of some of the features of successful reading programs that they identified (Pressley, Yokoi, Rankin, Wharton-McDonald, & Mistretta, 1997). Because this is descriptive research, they have neither linked these program features to student learning, nor have they attempted to get other schools to try the same features in their own programs to see what happens. This means that the features that they have identified may have no more than an incidental link with reading achievement or that they are more closely related to socioeconomic status or some other circumstantial or noneducational variable.

If someone then developed an instructional program based on the features constructed by Pressley and his colleagues, would this be research based? It would be in one sense, because the ideas of the program would be consistent with the findings of an empirical study, although this seems unsatisfactory given what most practitioners are seeking when they seek a research-based program. Maybe it would be better to label such instructional designs *research related* rather than research based. This would suggest that ideas have been drawn from descriptive and correlational studies and that the instructional design is related to this research. If this were the convention, then practitioners would know that no one had yet adopted such procedures with positive results, but they would expect the program to be consistent with features or relationships that had been described through careful empirical study.

The term *research based* then could be reserved for those instances when there was strong evidence that a particular type of instructional intervention—although not necessarily this particular version of it—had worked in the past. For example, we know that many studies have demonstrated better reading achievement results when phonics instruction was provided. If someone were to design a phonics program—a program untested, but similar to those that have been studied—this would be research based. This term would mean that programs similar to this one have worked successfully in experimental studies, and that this program was designed on the basis of that research.

Finally, the term *research proven* could be used to refer to specific programs or procedures that have been tested successfully in experimental research. Research proven would be the highest standard of research support, and it would mean that the specific program had been adopted under controlled research conditions and had worked. Of course, it is possible for an intervention to be successful under some circumstances or conditions or with particular types of students and not with others. If someone were to adopt a research-proven program under conditions very different from the ones studied, then it would still only be a research-based program for that purpose. These new conventions would go a long way toward reducing the confusion and miscommunication about research and educational practice and would offer researchers and program developers a clear set of targets while protecting educational consumers from being misled by unscrupulous or careless consultants, vendors, and the like.

My point is not that one type of research is better than another. We need all three, but each is based on a different logic, and we need to make certain that the decisions that we base on research are consistent with the logic of the actual studies. If you want to adopt some instructional method or material because you think it will improve achievement or student interest, then you are best served by experimental data (data based on the actual adoption of such a program).

Practitioners and policymakers need to know and use many other types of information as well if they are to make sound decisions. Often, other types of studies will be better for providing this kind of information. Federal policymakers rely heavily on the National Assessment of Educational Progress to reveal literacy achievement at different grade levels and in different regions of the United States, and local educators are interested not only in whether a program works on average, but whether there are side effects or unintended consequences. Who, for instance, would want to purchase a program that resulted in marginally better reading scores if their effort resulted in less student interest in reading, or if the best teachers felt stultified by the program and, consequently, left the district? Such information is more likely to be drawn from well-designed descriptive or correlational studies than from experiments.

Reading Research: What It Is and Why It Is Valuable

Much of what is written about reading education does not rely on data, and too often educators and the public fail to distinguish such writing from empirical study. Without such a distinction, research cannot be applied to reading in a sound way. It is essential to recognize that the books of Regie Routman or Jim Trelease are not research, nor is this chapter. The same can be said of the typical article that appears in the International Reading Association journal *The Reading Teacher.* These books and articles might represent bright, thoughtful insights about teaching and learning, but they are based on lived experience rather than formal research. Authors of experience-based publications and presentations might occasionally try to bolster an argument with a claim of research support ("the research says..."), but they do this rhetorically, only to convince an audience of the rightness of a claim. It often becomes part of a sales routine, rather than an appropriate use of empirical data. Too often professors, consultants, and policymakers are reckless in their use of the term *research.* Like the young child with his first cuss words, they see that people pay attention, so they invoke the name of research, but not the idea. Even when professors, consultants, and policymakers are scrupulous in this regard, however, many teachers assume that if something is written, it is research—and that is certainly not the case.

Research depends on data. It requires the collection and analysis of some kind of data using formal methods that go beyond the limits of lived experience to ensure the trustworthiness or validity of its results. These methods help the researcher see beyond his or her narrow perspective. Moreover, these formal methods allow readers to know how the results were constructed. That is why studies, unlike personal memoirs, revelations, or stories, are expected to share lots of details about where the information came from. Did the researcher unintentionally alter what was being described or were there adequate protections against this? In some studies, researchers observe for a long period of time so that participants stop noticing and therefore are more likely to behave as they normally would if the researcher was not there. That does not always make for fascinating reading, but it allows readers to identify weaknesses that could undermine the findings or that might be misleading. The strength of research is in its reliance on real world data and its open approach to sharing how the information came to be.

The point here is not that studies are the only sound basis for instructional decisions, or that teachers' lived experiences do not matter. However, it is essential to remember that research requires data that are collected in some formal and describable manner, and that this means studies can bring us to a deeper understanding. That is, we can analyze how the studies were done and can consider whether the researcher used biased procedures or drew implications that did not follow closely enough from the actual results. Such analysis is not possible when an article is based on experience and insight alone. You can disagree with the author, of course, but then you just have a disagreement with no inherent way of resolving the discrepancies. We can accept or reject such claims based on how well they match with our experience or whether we find the author to be convincing, but such presentations of information leave no grounds for getting beyond our beliefs or for resolving the dispute.

Research is valuable because it offers more than results. It provides grounds for thinking more deeply about what is being studied. Not long ago, I was sharing the results from a series of studies of sustained silent reading with a group of teachers. When I shared the results, one of the teachers said, "I disagree with that," as if research findings were something to disagree with. It is possible for results to be wrong, of course, but what makes them wrong is what is interesting. How did the researcher construct the findings, and was this biased or misleading in any way? A more appropriate response to research findings is to question whether the results would be different under different circumstances, and then either to collect such data or to examine the results of other studies of the same phenomenon. Would the results have differed if more books were made available to the children, or if the teachers were trained to use the program, or if different measures had been used? This kind of questioning and analysis might lead to the conclusion that the study results were misleading (rather than wrong), but this is quite different than what happens when claims are based on experience or belief alone.

When I was preparing to go to graduate school, a friend asked why I wanted to go. I explained that I hoped to learn to read research. She said, "That's easy. Skip all the boring parts and just read the implications at the end." Thank goodness my teachers taught me to avoid such bad advice. Not all the ideas in the implications section of a study necessarily emanate from the research. It is important to distinguish between the results, the reasoning, and the speculation of the researcher.

For example, many years ago I conducted a descriptive study on writing (Shanahan, 1979). I collected survey data from several hundred teachers to identify their instructional practices. Most teachers indicated that they devoted little time to writing instruction. As with any survey, respondents might lie or fail to remember, but for the moment let us assume the data accurately represented what was happening. On the basis of these data, it would be fair to conclude that these teachers did not teach much writing. But could I go beyond this? Is it unreasonable to claim that this limited amount of writing experience is the reason that children do not write very well? Here is where making the distinction becomes so important. The amount of teaching is an empirical finding of this study, but the claim of relationship (correlation) is an inference, because I did not collect experimental or even correlational data. That part of my article was speculation, insight, logical reasoning, or bias, but it was not an empirical finding. Therefore, my study should not be used as research support for the idea that increasing the amount of writing improves writing achievement.

That my study did not prove that minimal amounts of writing instruction had a negative impact does not make the claim wrong. It just means that it is an unproven supposition—at least as far as this study goes—rather than an empirical fact. A program intervention based on this study would, to use the earlier proposed conventions, be research related rather than research based or research proven. There are times, such as when there are no studies on a subject, when one might be willing to act on supposition and reasoning rather than on data. However, it is critical to recognize the difference and to understand that the chances of making a mistake are increased when this is done. Experience is a fine teacher, but her lessons are expensive.

Many research reports include five major pieces of information, and there are many ways of assembling these and reporting the information. Studies tend to provide (1) a purpose, hypothesis, or research question; (2) background discussion of relevant research; (3) research methodology; (4) results; and (5) implications for future research and practice. Researchers, when reading a study, are particularly interested in the results and methodology and the connections among those parts. Practitioners and policymakers, conversely, tend to focus on results and implications, with little attention to the methods used to create and analyze the data or the connections between the results and the implications. Inattention to method is one of the reasons that some practitioners come to believe that you can show anything with research. Instead of seeing the methodological contradictions as a way to assess how the findings may be generalized or applied in various situations, they are exasperated by the disagreements and reject the findings accordingly. A sound reading of research requires careful attention to the researcher's methods, a careful consideration of how these methods led to the results, and an evaluation of the certainty of the implications.

How Research Is Used

Research has many uses. This is part of the reason why communication between the research community and the public can become confused. The researcher may be using research toward one purpose, whereas the audience assumes it is for another. I have seen research used for at least three distinct purposes in reading and reading education. First, research can be used to identify problems or potential problems. Studies of comparative achievement indicate that Latino students are the most likely to drop out of high school (Waggoner, 1987), or that African American twelfth graders have reading levels comparable to those of white eighth graders (Donahue, Voelkl, Campbell, & Mazzeo, 1999). Such studies are valuable because by identifying problems they are likely to encourage further research as well as stimulate possible action by practitioners and policymakers. However, it is important to remember that such studies rarely determine why the problem exists or how it will best be solved.

Second, research can be used to increase our understanding of how things work with no implied or intended eventual action. Often such research emphasizes the processes of reading or learning to read over any kind of instructional procedures or materials. These studies try to determine how things work or in what sequence development proceeds. These studies might eventually have implications for how to design instruction more effectively, but that is not their immediate purpose, and the application of these findings to practice would be research related rather than research based or research proven. There are studies, for example, that have determined the nature of neural processing in poor readers (Shaywitz, 1996). Another example would be studies of how children think about stories and whether they appear to use the structural elements of stories in their memories (Stein & Glenn, 1977). Studies of how children talk about texts, including how boys and girls differ in the ways they share information during classroom discussions, would be still another example (Alvermann, Commeyras, Young, Randall, & Hinson, 1997). No matter what the findings of such basic studies, they do not attempt to recommend instructional actions or public policies, but only to increase our understanding of how things work. Of course, sometimes researchers will try to generalize implications that range far beyond the actual findings of their studies. Practitioners need to be especially careful to discern the differences between what the researcher found and what the researcher claims the findings mean.

Third, research can be used to develop technologies to apply in various situations. This includes attempts to evaluate the effectiveness of instructional materials, methods, techniques, procedures, and plans. This purpose, to determine what works, seems to be the main one that many public officials and practitioners attribute to educational research. Do children read better if they stay with the same teacher for multiple years? Which are more effective, predictable texts or decodable texts? Do children comprehend better if they receive direct vocabulary instruction? Providing research-based answers to such questions should result in the development of technologies that can be transferred to other classrooms or communities.

Earlier, I mentioned that Susan Neuman and I conducted a review of studies that had influenced practice. This was a follow-up on a similar review conducted by David Russell (1961), "Reading Research That Makes a Difference." Russell related that he had been discussing the importance of research with a school superintendent who claimed research findings were not used in education. To prove that this was not the case, Russell described 10 individual studies that had made a difference and that had, in some important way, changed the ways that we teach reading. He also tried to make sense of why these 10 studies mattered, when so many others evidently did not, focusing on their clear presentations and the importance of the issues studied.

Later, Harry Singer extended this idea (Singer, 1970, 1978) and challenged Russell's rationale about why certain studies mattered. Singer pointed out the many studies that met Russell's criteria but that had not been influential, even when they represented good ideas. He also pointed out that some studies had clearly altered practice (and were not mentioned by Russell), perhaps because they had not been such good ideas after all. In other words, Singer demonstrated that research could mislead and misinform, too.

It surprises some people that research can come up with the wrong answer about something, but it happens often. The data that are used in reading studies are constructed through the operations or methods used by the researcher. Classroom observers, for example, will find different amounts of sound reading instruction depending on which days or times the observations take place. Primary grade reading instruction is usually delivered in the morning, so an afternoon observation schedule would be misleading. Or, a study might introduce an innovative instructional strategy into classrooms, with the experimental teaching being delivered by the researcher who designed it; whereas in another study the regular classroom teachers with minimum special training might teach the same intervention. The results of this pair of studies are likely to be quite different, and the person who reads only one of these will be misinformed.

Although Neuman and I agreed with Russell and Singer that research was often influential, it was obvious to us that many, perhaps most, of the changes that had taken place recently had other impetus than empirical study. For example, there has been a well-documented explosion in the use of worksheets in reading classes (Anderson, Hiebert, Scott, & Wilkinson, 1985). There are no studies that precipitated that explosion; in fact, studies suggest that there is no correlation between learning and amount of worksheet use (Stallings, 1980). Worksheets became popular more because of the development of the photocopier and the decline of bulk paper prices than research. Similarly, many of the significant changes in textbook design or large-scale assessments (such as state testing programs) resulted because of economic, political, and social factors rather than empirical investigation. Despite all the "research based" and "research says" talk in education these days, it is important to remember that research—as valuable as it is—is not the only antecedent to change, nor is it always the most important. Research should be seen as a powerful, but partial, form of rhetoric. To base major educational decisions on single studies would be unwise, as the use of single studies, given the lack of variation in design and method, can be deceptive rather than informative.

Most studies in education are of a brief duration. The NRP (2000) found few studies that went beyond a single school year—with most studies not even being that long. Only in the area of phonics did the Panel see studies that went on for multiple years. What might be a terrific, research-proven idea might not be so terrific in your school if you intend to focus on that intervention for an extended period of time. School programs usually extend beyond a single year, so often children are asked to stay with some area of instruction throughout the grades. However, the lack of longitudinal research that tracks students' progress over multiple years undermines our ability to be certain that our approach will really maintain its benefits for children for long periods of time.

When one looks at the Russell, Singer, and Shanahan and Neuman lists, there are some other important conclusions to be drawn about how research is used and how it should be used. First, it should be evident that there are no final answers from research. Thorndike's (1917) work on the use of questions to facilitate comprehension instruction was lauded in the Russell list as an important instructional advance. However, as important as that was, it was later superseded by a study by Durkin (1978/1979) that bemoaned the reliance on teacher-asked questions and championed other more direct forms of teaching. No matter how firm or reasonable a particular research base, we should expect things to change as we learn more or as educational contexts themselves change. We should not be satisfied that the way we do things—even if based on research—will continue to work best in the future. Some of the research-based improvements will be extended or overturned by future studies.

This also demonstrates that a technique that works under certain circumstances might not work under others. This makes instructional research quite different from the study of medicines or surgeries. The true meaning of a positive finding for a classroom intervention study is not that it *will* work for you, only that it *could* work, and under particular conditions it has done so for others. The best situation for adopting a research-based practice is one in which it has proven effective under many varied conditions. Furthermore, too often we adopt research findings without the understanding, dedication, or commitment that was evident in the context in which it was originally successful. There are few automatically transferable findings in reading education. When practitioners adopt a research-based program, I suspect that they often ease up on their teaching, assuming that the gains will be automatic. This alone might render the intervention unworkable.

Also, it is important to recognize that research is most influential when its findings match the social, political, and economic tenor of the times. Studies that demonstrate something that the field or society wants to believe at a given moment are the ones that will be most influential. Research matters most not necessarily when it provides the best or most accurate answers, but when it offers the answers that we most want to hear.

When I was invited to testify before the U.S. Senate, I was proud to be asked and looked forward to my opportunity to speak "truth to power." However, I quickly figured out that I had been asked because my research results matched the policy actions that these particular senators wanted to take. If the results had not, I would not have been invited. They did not want to know what the evidence suggested; they wanted to know what evidence supported a particular point of view. Research can help us make sound judgments, but only if we pay attention to the contradictions and discrepancies that result from methodological variation. The use of data to support particular ideas, rather than as a route to better understanding, is a fool's errand.

The Russell, Singer, and Shanahan and Neuman lists of influential studies also indicate that as a field we are not particularly careful about matching the nature of a study to the changes that we adopt. The use of questions in comprehension, story maps, instructional techniques that highlight prior knowledge, and whole language each gained important impetus from research, but none of these emanated from studies that showed that such approaches actually worked with students. These all came from studies that were either trying to reveal potential problems or that were designed to figure out how something worked. None of these were adopted because the research showed that the approach improved the teaching of reading, although in some cases, later studies did support these widely adopted instructional practices.

Finally, it is apparent that we are often impelled to action by single studies, when our focus should be on collections of studies. The sound use of research depends on the use of valid techniques for identifying and synthesizing the results of multiple studies (Shanahan, 2000). There are well-developed techniques for conducting meta-analyses with intervention studies (Cooper, 1998), as well as ways to combine more qualitative data (Green, 1992). Researchers too rarely use these well-developed routines for making sense of research results, and because of this researchers often mislead policymakers, practitioners, and even themselves. They err by citing studies that support a given position, while systematically—and often unintentionally—ignoring those that do not. Or they mislead themselves by rejecting studies on the basis of quality when the findings do not match their preconceptions, though they accept similarly flawed studies with more favorable results. Synthesis procedures need to be explicit and thorough, facilitating the identification of a representative collection of studies conducted on a particular topic. They need to promote an unbiased comparison and analysis of the studies so identified.

The NRP (2000) developed an explicit rule-based system for the selection, synthesis, and analysis of existing research into what works in reading education. This was the first time any authoritative body had approached an education issue in this manner, and it may establish a new standard for applying research to practice. However, this effort has not been without critics who disagree with the Panel's requirement that experimental evidence is needed to demonstrate the effectiveness of an instructional procedure, technique, or material under real instructional conditions. The Panel did not accept indirect evidence such as descriptive or correlational studies as the final arbiter of the effectiveness of an approach. Nevertheless, the Panel was able to make clear determinations of the effectiveness of various instructional procedures for teaching phonemic awareness, phonics, fluency, vocabulary, and reading comprehension.

The NRP had to follow preestablished rules for study selection and could not take just those studies that they knew of or those conducted by friends of the panelists. It is important that all the evidence consistent with the study selection rules be included, as practical decision making is much better served by syntheses of substantial numbers of quality studies, rather than by large claims on the basis of little evidence. Studies, because they are constructed differently, may obtain different results; there is more to it than vote counting to combine the results of disparate studies. By including all studies and not just the ones whose results we agree with, we are able to make sense of the patterns of results—to understand the conditions under which an intervention works and those under which it fails.

Conclusion

Research can help us to think more effectively about teaching. It can provide us with techniques and technology that we would be unlikely to develop on our own. It can challenge us to see the world differently, more accurately, than we would without it. That is why we must be open to results that challenge our beliefs. Research can only do these things if we recognize what research is, and read the results accordingly. I hope that we are at the beginning of a sea change in our uses of research, from a use of research as a rhetorical club to beat our opposition into compliance to a more thoughtful way of inquiring about our teaching practice and children's learning. This is most likely to happen if researchers resist the temptation to overstate implications for their studies or to be less than candid about the limitations of their work and if teachers, principals, and others with responsibility for reading education study research methods and their limitations.

Questions for Discussion

1. Think of "best instructional practices" that you know. What does it mean to be a "best practice"? What role does research evidence play in making such determinations? What role should it play?
2. If you were planning to adopt a new program or material, what is the research standard (research related, research based, research proven) you would use in making your selection? How would you determine if a program met your standard? What would you do if none of the available programs met your standard?
3. Increasingly, school board members are calling for "research-based" instruction. What does it mean? How would you use what you know about research evidence to convince these policymakers not to do something that would disrupt sound instructional practice and policy?
4. A consultant comes to your school and recommends a set of instructional practices. The consultant says that the recommendations are based on what research says. What questions are you going to ask to make certain you are not misled?

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Chapter 2

Holistic, Integrated Approaches to Reading and Language Arts Instruction: The Constructivist Framework of an Instructional Theory

Brian Cambourne

I have heard it said that there is nothing so practical as a good theory. I would like to suggest that the converse is also worth stating—there is nothing so theoretically interesting as good practice. This is especially true of a specific set of instructional practices that pervade the teaching of literacy in many classrooms in Australia, New Zealand, and the United States. This set of practices goes by a variety of broad descriptive labels including "literature-based instruction," "integrated language," "natural learning," "student-centered instruction," "whole/holistic learning," "comprehensible input," "problem-based learning," and until it became a politically incorrect term in some parts of the United States, "whole language."

Despite the different labels, each of the instructional practices these labels describe seem to reflect similar assumptions about what it means to learn, to know, and to understand. These assumptions in turn invoke similar instructional principles. When these assumptions and principles are examined, it becomes obvious that the instructional practices that best fit them belong to what might be labeled "a constructivist paradigm of teaching, learning, and knowledge-building" (see Duffy & Jonassen 1992; Fosnot, 1996). My aim in this chapter is to provide a link between the theoretical assumptions that underpin constructivism, the instructional principles that reflect and support these assumptions, and the teaching and learning of reading. Finally, I will review the current state of research related to the application of constructivist approaches to teaching literacy.

What Is Constructivism?

Constructivism is a set of assumptions about learners and the learning process. It has been variously described as a " philosophical view on how we come to understand or know" (Savery & Duffy, 1995, p. 31), "a theory about knowledge and learning" (Fosnot, 1996, p. ix), whose "roots reach back to the earliest philosophical arguments over a rational foundation for knowledge" (Schwandt, 1992, p. 125). Although there are numerous scholarly accounts of the philosophical and epistemological bases of this tradition, I do not intend to engage in a full-blown discussion that compares these various interpretations. Rather, in this section I will reduce constructivism to what I consider to be its core theoretical assumptions by expressing them as three separate, but overlapping propositions:

1. What is learned cannot be separated from the context in which it is learned.
2. The purposes or goals that the learner brings to the learning situation are central to what is learned.
3. Knowledge and meaning are socially constructed through the processes of negotiation, evaluation, and transformation.

At first glance, this may seem to be a serious oversimplification of a very complex subject. However, these three propositions capture the assumptive parameters of constructivism, and as such provide a platform from which we can begin to unpack the multiple layers of meaning that are collectively embedded within them.

In what follows, I will explore each of these propositions in more depth.

What is learned cannot be separated from the context in which it is learned

This proposition comes closest to capturing the essence of constructivism. The way Savery and Duffy (1995) explain the embedded meanings within this proposition is particularly compelling:

> We cannot talk about *what* is learned separately from *how* it is learned, as if a variety of experiences all lead to the same understanding. Rather *what we understand is a function of the content, the context, the activity of the learner, and perhaps more importantly the goals of the learner.* Because understanding is an individual construction, we cannot share

> understandings, but rather we can test the degree to which our individual understandings are compatible. An implication of this proposition is that *cognition is not just within the individual, but rather it is part of the entire context, i.e., cognition is distributed.* (p. 32, emphasis added)

The implications of this proposition for the teaching of reading are far reaching. It means, for example, that the ends and means of reading instruction are linked inextricably. Thus, when it comes to the teaching of reading, constructivist theory rejects the idea that the ends justify the means. On the contrary, constructivist theory argues that the ends of reading instruction are very much determined by the means employed to teach it. In other words, the experiences and contexts in which learning to read is embedded will be critical to each learner's understanding of, and ability to use, reading (or writing, or spelling, or grammar, etc.).

It could, for example, mean that learners who are taught in ways that imply there is one "correct" interpretation of, or a "correct" response to, a text will become readers who more readily accept and comply with seemingly "authoritative" or "persuasive" texts than readers who are prepared to critique, contest, or question such texts. It could mean that students who learn to read in classrooms that emphasize that effective reading involves errorless reproduction of texts that are semantically or syntactically implausible or even nonsensical (e.g., *A Pig Can Jig* [Rasmussen & Goldberg, 1994]) will understand and subsequently use reading quite differently from those who are taught to read in ways that emphasize the construction of meaning from texts that are semantically and syntactically plausible.

Constructivist theory also rejects the notion that restricting emergent readers to "decodable texts" (i.e., textoids that are devoid of plausible meaning) can be justified in terms of "tough love" (a variation of the old adage that when it comes to children it is sometimes necessary to be cruel in order to be kind).

The purposes or goals that the learner brings to the learning situation are central to what is learned

Smith (1981) argues that although immersion and demonstration might be necessary conditions for learning to occur, they are not sufficient. Potential learners must first engage with the demonstrations that immersion provides. Engagement incorporates a range of different behaviors. It has overtones of attention; learning is unlikely if learners do not attend to demonstrations in which they are immersed. However, attention is unlikely if there is no perceived need or purpose for learning in the first place. Engagement also depends on active participation by the learner, which in turn involves some risk taking; learners can only actively participate if they are prepared to give it a try.

Previously, I tried to identify some of the factors that affected the degree to which learners would engage (or not engage) with the demonstrations of literacy that were provided in their classroom settings (Cambourne, 1988, 1995). I formulated the following Principles of Engagement:

- Learners are more likely to engage deeply with demonstrations if they believe that they are capable of ultimately learning or doing whatever is being demonstrated.
- Learners are more likely to engage deeply with demonstrations if they believe that learning whatever is being demonstrated has some potential value, purpose, and use for them.
- Learners are more likely to engage with demonstrations if they are free from anxiety.
- Learners are more likely to engage with demonstrations given by someone they like, respect, admire, trust, and would like to emulate.

These principles can be linked to Savery and Duffy's (1995) observation that "the purposes or goals which the learner brings to the learning situation are central to what is learned" (p. 31). They explain the link as follows:

> When we are in a learning environment, there is some stimulus or goal for learning—the learner has a purpose for being there. That goal is not only the stimulus for learning, *but it is the primary factor in determining what the learner attends to, what prior experience the learner brings to bear in constructing an understanding, and basically what understanding is eventually constructed.* (p. 31, emphasis added)

I interpret this to mean that the knowledge and understanding that learners will construct from witnessing the demonstrations their teachers provide is contingent on the depth to which they engage with those demonstrations. This in turn is contingent on the degree to which each of the principles of engagement are in place in that learning setting. This means that teachers must know how to create learning settings that can convince all learners who enter them that they each need to engage as deeply as possible with all the demonstrations the setting provides about reading and how it should be used.

Knowledge and meaning are socially constructed through the processes of negotiation, evaluation, and transformation

Constructivist theory argues that although there is a real world that we experience, there is not one complete, correctly structured set of meanings about this real world that exists independently of us, just waiting to be discovered and understood. Rather, constructivism holds that we impose meaning on this real world, and that these meanings are socially constructed.

The primary mechanism available for learners to develop their individual understandings and knowledge is social interaction. In constructivist classrooms, the use of collaborative groups is one of the most potent forms of this mechanism, because such groups provide a readily available means of testing one's own understandings through listening to and reflecting on the understandings of others. Use of collaborative groups also provides a medium for enriching, interweaving, and expanding our understanding of particular issues or phenomena.

When I began to explore what made constructivist classrooms "tick" some 25 years ago, it became obvious that certain classroom structures and processes (as defined by Turbill, 1994) were necessary accompaniments to the social interactions that took place. In 1995, I identified some of these structures and processes as follows:

> So far we have identified *transformation, discussion/reflection, application, and evaluation.* It's hard to separate these [processes and structures] from each other...[as they] co-occur and mutually shape each other. The seams between them are difficult to find. (Cambourne, 1995, p. 188, emphasis added)

Often when I share these five terms and what they mean with teachers who are grappling with the proposition that "knowledge and meaning are socially constructed through the processes of negotiation, evaluation, and transformation," I am told, "But I am already doing a lot of collaborative and cooperative learning." And they are. Typically, however, this instruction is done as an add-on rather than as an integral part of the overall instructional framework. Typically, too, teachers limit discussion to mean face-to-face oral conversation. Conversely, teachers who understand constructivism at a deeper level realize and understand what Margaret Meek (1988) taught us, namely that the authors children read also teach them to read. Meek's work helped teachers understand that if the books are books that children know well, even by heart (what Holdaway [1979] once called "memorable texts"), then as the child already knows and expects what the words in the text will be, it is the author who shows the child how to read them. This process is a unique mix of the processes of discussion and reflection with the author and oneself, which in turn causes learning.

Given these three theoretical propositions and the assumptions they collectively reflect about constructivism, is it possible to infer a set of instructional principles that can be used to generate a set of instructional practices that will support the teaching of reading? I believe that it is. The next section will explore this topic.

What Instructional Principles Emerge From Constructivist Theory?

Over the years I have asked teachers who hold a constructive philosophy (as I have defined it) to tell me which principles they typically invoke to guide their attempts to create constructivist reading classrooms. These five principles summarize the many overlapping facets of what they have told me.

1. Create a classroom ethos/culture that supports and encourages deep engagement with multiple demonstrations of effective reading behavior.
2. Employ teaching activities and strategies that are a judicious mix of the four dimensions of teaching and learning (explicitness, systematicity, mindfulness, and contextualization).
3. Employ structures and processes that create continuous opportunities for the development of intellectual unrest.
4. Develop each learner's metatextual awareness of the processes and understandings implicit in effective reading behavior.
5. Design and use tasks that will coerce authentic use of the processes and understandings implicit in effective reading behavior.

Let us examine each of these principles in more detail.

Create a classroom ethos/culture that supports and encourages deep engagement with multiple demonstrations of effective reading behavior

Teachers who manage to create classroom cultures that promote deep engagement do it by using a pro-learning, pro-reading, pro-writing discourse (Cambourne, 1995). This discourse is typically realized in two main ways: (1) through the expectations that are communicated, and (2) through opportunities to engage in reflective learning. I will briefly explain each.

Expectations that were communicated. The expectation themes that continually pervaded the language and behaviors of constructivist classrooms I observed include the following:

Theme 1: Becoming an effective reader is an extremely worthwhile enterprise that will greatly enhance the quality of one's life.

Theme 2: All members of this learning community are capable of becoming effective readers. No one can fail to do it.

Theme 3: The best way to become an effective reader is to share and discuss the processes and understandings you are developing with others, take risks and "have a go" both as a member of a group and individually, approximate, and reflect on the feedback you receive.

Theme 4: When discussing the meanings you construct through reading, all statements, comments, and judgments related to those meanings should be justified using plausible and sensible arguments and examples.

Theme 5: It is safe to "have a go" in this setting.

Theme 6: One can be said to "know" and "understand" when one has made that which is to be known and understood one's own. (Sometimes this was expressed as "taking responsibility for one's learning.") The process of making something one's own involves potential learners transforming the meanings and skills that someone else has demonstrated into a set of meanings and skills that is uniquely theirs.

These constructivist classrooms promoted deep engagement with learning to read by continual expression of these expectation messages, through the comments about texts and books teachers read aloud, through responses to learners' approximations (both at the whole-class level and in small groups and individually), through the comments made during sharing time when different students volunteered to share, through the think-alouds the teachers did, through the modeling they did, and through the features of texts and reading writing processes to which they continually drew their students' attention.

Opportunities for reflection. Deep engagement in learning to read also was promoted by reflection. In these constructivist classrooms, students were expected to reflect on their learning, often in learning journals. This process of reflection was honored by allocating time for it to be done, by modeling how it could be done, and by justifying its value as a means of learning and understanding the skills and knowledge necessary to become an effective reader.

Employ teaching activities and strategies that are a judicious mix of the four dimensions of teaching and learning

The teaching-learning events and activities that take place in constructivist classrooms can be described in terms of four categories of learning and teaching:

1. explicit teaching
2. systematically planned teaching
3. mindful teaching
4. contextualized teaching

These four categories are really concepts, which have the following opposites:

1. implicit teaching
2. unsystematically, unplanned, unstructured teaching
3. mindless teaching
4. decontextualized teaching

If these opposing concepts are placed at extreme ends of imaginary continuums, a potentially useful framework for understanding the teaching and learning that occur in constructivist reading classrooms emerges.

Figure 2.1. The four dimensions of teaching and learning

Explicit → as opposed to → Implicit
Systematic → as opposed to → Unsystematic
Mindful → as opposed to → Mindless
Contextualized → as opposed to → Decontextualized

Let us call this framework the four dimensions of teaching and learning (see Figure 2.1).

Each of these dimensions is a continuum; therefore, it becomes difficult to describe in precise behavioral terms how one point on any of them differs from another, except at the extremes. For example, on the explicit-implicit continuum, there is a gradual shift from explicit teaching to implicit teaching.

Explicit-implicit. Explicit teaching refers to the practice of deliberately demonstrating and bringing to learners' conscious awareness those invisible processes, understandings, knowledge, and skills they need to acquire if they are to become effective readers. Implicit teaching refers to the practice of deliberately leaving it to learners to discover and work out these things for themselves.

This raises the question of which sorts of things can be made explicit in constructivist classrooms. Although this will undoubtedly vary from classroom to classroom, in the constructivist classrooms I observed there was a high incidence of teachers making explicit such things as the following:

- personal dislikes, enthusiasm, and tastes in literature and other kinds of texts
- reasons for engaging in the reading events and activities they prepared
- implicit, often invisible, processes that make successful reading (and writing, spelling, and learning) possible

Each of these forms of explicit teaching seemed to serve the following purposes:

- By making explicit their personal likes and dislikes about the texts they shared, and even sharing some aspects of their personal lives such as what their children or other relatives were doing, teachers were able to create an ethos that supported the establishment of the kind of personal relationships that they believed were at the core of the learning cultures they were trying to create.

- By making explicit the invisible, often taken-for-granted processes and knowledge that effective literacy behavior requires, teachers helped learners in at least two ways. First, for students who did not come from homes that provided repeated opportunities to discover these processes, teachers provided repeated demonstrations of the skills, understandings, and know-how that students might not otherwise get the opportunity to understand. Second, the teachers provided opportunities for students who had a confused understanding of how reading and writing work to clarify their confusion.
- By making explicit the reasons for asking students to engage in the learning activities that were introduced in the classroom, the teachers constantly helped students to contextualize their learning by helping them understand how all the pieces of what they do in the course of a school day fit together to achieve the purposes of school and school learning.

Systematic-unsystematic. Systematic instruction is instruction that is based on proactive, rational planning. It is evidenced by formal planning documents that indicate the teacher has thought ahead and developed and documented a blueprint of future lessons, activities, resources needed, and assessment procedures that will be used.

Unsystematic instruction is unplanned or shows little evidence of rational planning. A teacher's position on this continuum reflected the coherence, rationality, and proactive nature of his or her planning and preparation. Two interdependent indicators were used to locate teachers along this continuum. One was the degree to which the planning documents the teacher prepared reflected forward, proactive, rationale planning. The other was the teacher's ability to articulate this rationale. Teachers who were judged high on systematic instruction were those who could explain in confident and coherent ways why they had planned to use the teaching-learning activities and processes they had included in their forward planning documents and how such activities facilitated their students' learning. Teachers who were judged to be toward the unsystematic end of this continuum were those whose planning documents were sparse and/or difficult for another professional (myself) to understand, and who could not explain and justify their planning decisions in anything but superficial ways (for example, "I don't know why I have show and tell each day. Isn't it good for kids?"). The data strongly indicated that teachers who were successful (according to my criteria) at creating constructivist classrooms were more toward the systematic end of this continuum.

Mindful-mindless. Ellen Langer (1989, 1997) of Harvard University introduced the concept of mindful as opposed to mindless learning. Like constructivists who support the first proposition discussed earlier, Langer argues that the way we take in information or learn skills ultimately determines how we use it/them later. Thus, if we learn something like reading or writing, or indeed any of the accoutrements of literacy, in a mindful way we are more likely to use it in mindful ways. Langer equates mindless learning with learning that encourages and develops nonconscious automaticity. Such automaticity, she argues, usually develops as a consequence of mindless repetition and practice. Automaticity results in responses and meanings that tend to be nonconscious, invariant, and fixed, irrespective of context. This kind of learning creates a mindset that inhibits critical awareness. She equates mindful learning with "openness, not only to new information but to different points of view" (Langer, 1989, p. 68). I equate this with metacognitive awareness; that is, the state of being consciously aware of what is going on, of being consciously aware of other possibilities, given the context. Mindful teaching and learning were more obvious in constructivist classrooms. Mindful learning is also closely aligned with the discourse that is employed by teachers.

Contextualized-decontextualized. Contextualized learning is learning that makes sense to the learner. Because it makes sense, such learning is not only less complicated, but it also is more likely to result in robust, transferable, useful, and mindful learning. In contrast, learning that learners cannot make much sense of leads to automatic, rigid, mindless learning. The degree to which learners can make sense of any learning situation is a function of the degree to which they can place it in a context that helps them make connections. In the constructivist classrooms I observed, teachers consciously strove to contextualize their students' learning.

The most readily available medium for teaching in ways that are high on the positive ends of these continuums is authentic literature, both fictional and informational texts. Perhaps this is why in the early days of constructivist approaches to teaching reading, the approach was labeled "literature-based."

Employ structures and processes that create continuous opportunities for the development of intellectual unrest

Intellectual unrest, puzzlement, cognitive conflict, and disequilibrium are essential states that learners must experience if they are to engage deeply with demonstrations and if they are to draw from background experiences to assist their learning. Piaget (1977) argued that disequilibrium occurred when a learner's current experience could not be assimilated into existing schema. Dewey (1938) argued that it was the "problematic" that both initiated and organized learning. Savery and Duffy (1995) describe the learner's "puzzlement" as being the stimulus and organizer for learning. I prefer to use the term *intellectual unrest*, because it more readily suggests both intellectual and pragmatic goals. The important point, however, is that teachers need to provide continuous opportunities for intellectual unrest to be created and resolved.

Teachers in the constructivist classrooms I observed used a mix of the following structures and processes to achieve this:

- transformation
- discussion/reflection
- application
- evaluation

Transformation occurs when learners transform knowledge and/or skills that others have modeled or supplied into knowledge and/or skills that are uniquely theirs, without significantly changing the meanings and processes inherent in the original model. It is analogous to creating a personal paraphrase (i.e., expressing some concept or knowledge in one's own words while closely maintaining the original meaning). Transformation seems to be necessary before the learner can take responsibility for (i.e., own) the learning. Learning that is not accompanied by transformation is shallow and transitory.

Discussion/reflection are language processes that serve identical purposes for the learner—to explore, transact, and clarify meaning. They differ only with respect to audience. Discussion is typically oral communication with others, whereas reflection is discussion with oneself. The process of transformation is enhanced through both discussion and reflection. Both allow the exchange and interchange of meaning. Reflection creates further opportunities for clarification, extension, and refocusing, which often has the added benefit of forcing learners to make explicit their unconscious language and literacy know-how.

Application is a classroom structure through which teachers create opportunities that subtly coerce learners to apply the skills and understandings they have been developing in reading to an authentic reading task. Application is interdependent with discussion, reflection, and transformation. Collaborative problem solving involves the joint application of skills and knowledge. This coerces discussion, which in turn supports transformation, which leads to reflection, which in turn leads to further transformation, and so the process continues.

Evaluation is an inherent part of learner response. Learners constantly evaluate their own performance as they engage, discuss/reflect, transform, and apply that which is being learned. It does not matter whether learners are engaged in learning to iron, play tennis, write an economics essay, tie shoelaces, acquire the oral language of the culture, or read; they continually ask themselves, "How am I doing?" Furthermore, those who adopt the teacher's role in any teaching and learning situation also are engaged constantly in evaluating. They are continually responding, giving the learners with whom they interact information that answers the "how-am-I-doing" question. This help or feedback typically comes in the form of some kind of response from the person in the teacher role. It also can come through discussion with other learners involved in similar kinds of learning, but only if there is a strong sense of collaboration and collegiality within the group.

Develop each learners' metatextual awareness of the processes and understandings implicit in effective reading behavior

Constructivist teachers deliberately strive to make explicit many things about reading, writing, learning, and language that most adult readers take for granted. This was obvious when I interviewed students from their classrooms. Many students displayed high degrees of what I called "metatextual awareness" (Cambourne, 1988). By metatextual awareness, I meant that these students were consciously aware of, and could articulate in persuasive and coherent ways, knowledge about and understanding of the ways texts function, the processes and strategies that effective readers use when creating meaning from these texts, and the range of options available to them for solving the literacy-related problems they were expected to solve. They could, for example, explain the relationships among reading, writing, and learning, making explicit such things as how they learned many things about spelling and punctuation through acts of reading, and they could describe the differences between skim reading, reading for information, proofreading, and so on.

Constructivist teachers develop metatextual awareness in many ways. As described earlier, they continually employ teaching strategies that are further toward the explicit end of the explicit-implicit dimension. They also design activities that require students to reflect on and make explicit the connections and relationships between different forms of language and between different ways of constructing meaning. Such activities create conditions for learners to reflect on and make explicit for themselves, their peers, and their teachers their developing knowledge and understanding of language and how it works. In short, constructivist teachers design activities that promote learning about reading by providing opportunities for learners to get inside texts in ways that traditional didactic drill and practice activities do not. Constructivist teachers do this because they believe that activities that involve manipulating meanings across different semiotic systems or within the same semiotic system push learners to a deeper understanding of how language works. The discussion, reflection, talking, writing, and listening that accompanies such activities help bring to conscious awareness that which was previously only known at the unconscious, intuitive level. As a consequence, learners become metacognitively aware of language, and this results in more control over it.

Design and use tasks that will coerce authentic use of the processes and understandings implicit in effective reading behavior

This is an important and recurring principle in constructivist theory. In constructivist theory, authenticity refers to the degree to which learning activities used to promote reading resemble the kinds of reading activities and learning that occur outside the traditional, institutionalized school setting. The more an activity is like an everyday activity that is performed outside the school setting, the higher the degree of authenticity it possesses. With respect to reading, writing, and the other accoutrements of literacy, the more that the activity requires the students to engage in the kind of reading-writing-literacy behaviors that highly literate, proficient adults use to address their needs, the more authentic the activity is judged to be.

What Does Research Say About Constructivist Approaches to Teaching Reading?

This question has inspired much debate and discussion over the past half-century (Adams, 1994; Luke, 1988; Shannon, 1992). This in turn has spawned a number of articles in prestigious journals and books (Shannon, 1995; Zemelman, Daniels, & Bizar, 1999), and more recently hundreds of claims and counterclaims in newspapers, official government inquiries and reports, and on websites and Internet bulletin boards. These claims and counterclaims fall into four broad categories:

1. Research evidence that supports or refutes constructivist methods of teaching
2. Test scores that support or refute the use of constructivist methods of teaching
3. Theoretical perspectives about language and learning that support or refute constructivist perspectives on teaching literacy
4. The epistemological rigor of the research paradigm used by advocates or adversaries of constructivist perspectives on the teaching of literacy

Table 2.1 summarizes the essence of the research that falls into each of these four categories. Careful analysis of the table suggests that each side's arguments cancel out the other. Conversely, it could be argued that there are more problematic issues that need to be addressed.

Many people believe that the controversy generated by the constructivist versus objectivist argument goes deeper than a debate over instructional methods or the quality of research findings. Some see it as a struggle between deeper, ideological factors. Whichever ideological factors fuel the different antagonists in the struggle, all seem to subscribe to some form of conspiracy theory—a theory proclaimed by certain persons or groups whom Wilson (1998) describes (tongue-in-cheek) thus:

> [Conspiracy theorists are those who proclaim that there are] some persons or groups, whom the theorist can specify, often with front names, hind names, and addresses, that deserve all the blame for the horrors that afflict the rest of us—from ecological imbalance to economic hardship, from war to poverty, from drug cartels, to the fact that you can't get a plumber on weekends anymore. (p. 5)

Table 2.1. Research for and against constructivist approaches to teaching reading

Category of Research and/or Theoretical Evidence	Evidence/Arguments That Deny the Validity of Constructivist Approaches	Evidence/Examples That Support the Validity of Constructivist Approaches
1. Many years of research into teaching methods "proves" that constructivism "works"/"does not work"	A prototypical example: "Apparently constructivists believe that over 100 years of experimental research (and the creative, skillful, and durable repertoires of dancers, martial artists, painters, writers, musicians, and athletes) showing the necessity of practice, practice, and more practice for accuracy, fluency, endurance, generalization, retention, and creativity can be invalidated by chanting the vapid (but apparently catchy) phrase 'drill & kill'" (Kozloff, 1998, p. 2). See also Moats (1995) and Lyon (1998).	A prototypical example: "For six decades, leading researchers and writers have steadily produced summaries and meta-analyses that reiterate the key findings of mainstream, long-term research. For example, Constance Weaver has published research summaries on many aspects of progressive, whole-language teaching, in both book and electronic forms. Margaret Moustafa has pulled together the findings about the role of phonics in teaching reading. For more than 20 years, David Johnson, Roger Johnson, and Edythe Holubec have reviewed the hundreds of studies on the collaborative aspects of the progressive classroom" (Zemelman, Daniels, & Bizar, 1999, p. 7). See also Krashen (1999) and Coles (1998).
2. Results of state mandated standardized test scores "proves" that constructivism "works"/"does not work"	Basically this argument goes like this: • California's test scores in the '90s are the second lowest in the United States according to the most recent NAEP scores. • California had embraced a constructivist approach for the previous 10 years. • Therefore constructivist approaches cause reading failure. The recent legislation passed in California (AB1086 1998), which both prescribes and proscribes certain methods and materials for the teaching of reading, is a consequence of this kind of argument.	Basically this argument goes like this: Meta-analyses of the data that link low reading scores to a constructivist approach reveal such things as: • There had been no significant change in California's standardized test scores for at least the last 10 years, which makes it difficult to link the NAEP scores directly to the constructivist framework that had been in place (McQuillan, 1995). • "While California ranks near last in the United States in fourth grade reading scores, it also ranks near last in school library quality. This is not a coincidence. A number of studies relate school library quality to

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		reading achievement. Of most interest to California is the finding of a strong positive correlation (r = .495) between books per students in school libraries in 41 states and NAEP fourth grade reading scores" (Krashen, 1996, p. 2). • Evidence from the same set of NAEP scores shows that other states that also supported a constructivist approach achieved very high scores on the same test. • Elley (1993) shows a similar trend with respect to a cross-cultural study he reported.
3. Models of language and learning that argue that constructivism "works"/"does not work"	Those who cite this category of evidence typically refute the argument that learning to control the written form is not to be considered analogous to learning to control the oral form of language. The argument they mount usually goes along these lines: • Oral language acquisition is a special case of learning. Because the brain has been "prewired" to learn oral language, the principles that make this possible cannot be applied to acquisition of the written form of language. • As there is no evidence that students have ever managed to acquire literacy "naturally," the above claim must be true.	Those who cite this category of evidence argue that the brain is prewired to construct meaning and that oral language is just one example of the brain's need to be continually making sense of the world. The argument they mount usually goes along these lines: • Over the long period of human evolution the brain and the ecological settings in which it has been forced to function (and survive) have mutually shaped each other. • One outcome of this long evolutionary process has resulted in a genetically preprogrammed organ of learning (the brain) that is capable of very complex learning if certain ecologically constrained social conditions ("the conditions of constructivist learning") are present in the learning setting. See also Deacon (1997).

(continued)

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Table 2.1. Research for and against constructivist approaches to teaching reading *(continued)*

4. Epistemological rigor of research model used to generate evidence	Those who use this argument claim that the only scientifically respectable way to get at the "truth" is to apply the tenets of a process called "the scientific method" or the "rationalistic paradigm of inquiry" (Guba & Lincoln 1989). Hirsch (1996) claims that all other research is considered to be "phony" and part of a vast conspiracy to misinform teachers, parents, and the general community about the teaching of literacy. The only research that educators can and should rely on is research that is based on a medical model and that, according to some who mount this argument, originates from outside education, in fields such as neurophysiology.	Those who use this argument argue that so-called "scientific" research is not only a narrow and outdated view of how "truths" are discovered, but actually serves to distort the "truth." They cite such evidence as: • Quantum mechanics overturned the basic assumptions of attainable objectivity. So all research, especially that based on traditional "scientific method," is biased and corrupted by the frame of reference that the human mind brings to it. • Even if assumptions regarding attainable objectivity were credible, it is impossible to establish cause-effect relationships between educational treatments and learning, because the focus of such research is the construction of meaning, and meaning is not subject to accurate, reliable, or valid measurement. • Nonconstructivist researchers are forced to discount the wealth of ethnographic and naturalistic research that has informed teaching and learning.

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For example, Zemelman, Daniels, and Bizar (1999) suggest the struggle is predominantly religious:

> The great debate isn't a clash over phonics or educational research at all, but rather a symbolic skirmish in the broader culture wars between two opposing camps on matters of teaching and learning, of child development, and of human nature. In a sense research studies and journal articles are beside the point; this is a religious controversy. After all, if you believe that children are intrinsically flawed beings who need to be tightly controlled and amply punished, you will design a very different classroom from the one you would design for people who were seen as basically good, worthy of love and respect, and capable of self-actualization. If you believe that books—especially religious scriptures—have only one correct meaning that is inherent in the text, you are not going to be friendly to schools that teach children to explore a wide range of books and ideas, to write and discuss their own responses, to make critical evaluations of what they read, and develop strong and independent voices as authors. (p. 9)

Although Wilson (1995) agrees to the extent that he uses a religious metaphor—the new inquisition—to typify the struggle, he presents it essentially as an ideological struggle between differing views of what constitutes scientific truth and the methods used to construct such truths. The implications of Wilson's perspective for the constructivist versus instructivist controversy currently taking place in literacy education is that it is one example of the resurgence of "certain habits of repression and intimidation that are becoming increasingly commonplace in the scientific community today" (p. i).

Others see it as predominantly a struggle among differing socioeconomic ideologies. On one hand, there are those who are committed to the global application of a kind of capitalistic fundamentalism (Apple, 1991; Franken, 1999; Spring, 1997; Thurow, 1997), the core tenet of which is the maximization of profit by the minimization of costs. On the other hand, there are those who argue that this ideology is a mean-spirited one that not only ignores social equity, but that deliberately creates social inequity by downsizing and restructuring companies in the name of increasing the bottom line, thereby creating unemployment and hardship for workers, and thus exploiting the least powerful in the community (Goodman, 1999).

Then there are those who see the struggle as an attempt by governments of all political persuasions to control the content and processes of education to ensure their hold on political power (Goodman, 1999; Lankshear, 1994; Taylor, 1999). Those who hold this point of view argue that control of education leads ultimately to thought control, which in turn provides a platform for, at best, controlling, at worst, significantly influencing, the political process. Part of this ideological struggle is the destruction of strong public school systems that might have been originally set up to achieve the Deweyan ideal of education for democracy.

Finally, there are those who see the struggle as an example of a more universal

> benign conspiracy for a new human agenda [that] has triggered the most rapid cultural realignment in history, [a realignment that] is a great shuddering, irrevocable shift overtaking us...[not] a new political, religious, or philosophical system, [but] a new mind. (Ferguson, 1980, p. 26)

As I intimated above, conspiracy theories abound. Might there be some grains of truth in each of them? What seems clear is that whichever perspective one takes regarding this controversy, one will ultimately encounter an ideological position of some kind. Until these ideological positions are made explicit, shared, discussed, and reflected on, I contend that the adversarial nature of such controversies will continue.

Conclusion

My goal in this chapter was to present a detailed description of a holistic, integrated approach to reading and language arts instruction as an instructional model that is congruent with constructivism. I set out to provide a clear link between theory and practice. Some of the features of a holistic, integrated language arts learning environment are that the learners are actively engaged in learning reading, learning through reading, and learning about reading simultaneously as they engage in authentic reading activity. The focus is on learners as constructors of their own knowledge in a context similar to that in which they would apply that knowledge. Learners are expected and encouraged to think both critically and speculatively as they monitor their own understanding at the metacognitive level. Social negotiation of meaning is an important part of the learning culture that is created. It is not a Socratic process, nor is it a kind of discovery learning in which the learner is supposed to discover the outcomes the teacher wants. It is an environment in which the teacher is not a director or facilitator of the students' learning, but rather is a participant-observer in the learning process, and a supportive guide and coach when necessary.

Questions for Discussion

1. Think of something you have recently learned to do outside of formal educational institutions, such as learning how to crochet or play a sport. Spend 10 minutes listing all the things you experienced in the learning process. Then, share your experiences with others in a small group. What constructivist-like principles (if any) can you identify in the group's experiences? What (if any) are the implications for classrooms?
2. Howard Gardner (1985) describes the Suzuki method of learning the violin as "an intriguing experiment" (p. 4), which makes it possible for "an individual with apparent modest genetic promise [to] make remarkable strides in a short time" (p. 35). Research the basics of the Suzuki method, and then discuss your findings in groups. Is the Suzuki method based on constructivist principles? Why? What might a Suzuki method of teaching literacy look like in action?
3. Ask one of the professors of a course you are taking these four questions: (1) What is/are the main purpose(s) of this course? (2) Where did the knowledge inherent in this course come from? (3) How do you think this knowledge is best acquired by students who take your course? (4) What is/are the main purpose(s) of the assessment tasks in this course? From the responses given and from your experiences as a student in the course, would you classify your professor as a constructivist? Why?

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Chapter 3

Home and School Together: Helping Beginning Readers Succeed

Jeanne R. Paratore

Early Beliefs About Parents and Children's Literacy

> I am ashamed to say that in spite of encouragement from Mother, and delightful hours spent with Aunt Fanny listening to poetry, I was a very backward child and could not read at 6 years old. Mother failed to make me study, and one day she said, "I am going to bring someone to talk to you. He is a great poet, and perhaps he could persuade you to learn to read."
>
> This was Matthew Arnold, a friend of Aunt Fanny, whose poems she used to read to me. I was thrilled to see him, and after all these years I can still see his tall, angular figure, as he stood with his back to the fire looking down upon me from what seemed to me an immense height. He never smiled that day. His whiskers were thicker and longer than any I had seen; and I was glad that Father wore a neatly trimmed beard. This stern-looking man then sat down and took me on his knee while he talked to me about books, seeking to fire my interest; and in this he succeeded, for I could have listened to him all day. Then he stopped talking of poetry, and said very seriously,
>
> "Your mother tells me that you do not know how to read, and are refusing to learn. It surprises me very much that a little girl of six should not know how to read, and expects to be read to. It is disgraceful, and you must promise me to learn at once; if you don't, I shall have to put your father and mother in prison."
>
> I was startled and frightened by his threat, and at the same time very puzzled that a poet could put people in prison. I asked Father whether he could put him in prison. Father hesitated, "No, I don't think he could, although he is a Government Inspector of Schools."
>
> I still felt mystified, but his threat made me start in earnest to work with my nursery governess, and to my surprise and pleasure, I found I could read Grimm's *Fairy Tales* within a few weeks. (Sutherland, 1975, p. 259)

Happily, we do not threaten imprisonment of parents whose children fail to learn to read successfully. Yet many of us do, in fact, hold parents largely responsible for children's reading failure. In a study conducted by the organization Public Agenda (Farkas, Johnson, Duffett, Aulicino, & McHugh, 1999), nearly 7 in 10 teachers believed that the most serious problem they face is with students who "try to get by doing as little work as possible" (p. 25), and they blamed parents for this behavior. Majorities of both suburban (67%) and urban (82%) teachers reported that too few parents are knowledgeable about their children's education; 83% of teachers stated that they believed that parents are failing to provide adequate and necessary support for their children's academic success. Survey data such as these are supported by case study investigations in which researchers report the most common obstacle to children's success in school identified by teachers is parents' lack of time for their children, lack of interest in their children's education, or lack of knowledge about how to support their children's academic success (Delgado-Gaitan, 1996; Purcell-Gates, 1995; Valdés, 1996).

The evolution of the belief that parental action or inaction is largely responsible for children's school success or failure is fairly easy to trace. For years, studies have correlated children's reading success with parental traits and actions. Beginning as early as 1908, Edmund Huey called attention to the role parents play in children's beginning reading, explaining,

> Almost as naturally as the sun shines, in those sittings on the parent's knee, [the child] comes to feel and to say the right parts of the story or rhyme as his eye and finger travel over the printed lines.... The secret of it all lies in parents' reading aloud to and with the child. (p. 332)

In the years that followed, several studies reported that parent-child storybook reading correlated with children's success in school. In two investigations, Durkin (1966) compared the home experiences of early and nonearly readers. She found that early readers had parents who spent time with their children, who read to them, who answered their questions and their requests for help, and who demonstrated in their own lives that reading is a rich source of relaxation, information, and commitment. She concluded that

> early readers are not a special brand of children who can be readily identified and sorted by tests. Rather, it would seem, it is their mothers who

> play the key role in effecting the early achievement. The homes they provide, the example they show, the time they give to the children, their concepts of their role as educator of the preschool child—all of these dimensions of home life and of parent-child relationships appeared to be of singular importance to the early reading achievement described in this report. (p. 138)

The belief that parent-child reading plays an important role in children's eventual school success received additional support in many subsequent investigations (for example, Briggs & Elkind, 1977; Clark, 1976; Dunn, 1981; Mason, 1980; Morrow, 1983). The accumulated body of evidence led Anderson, Hiebert, Scott, and Wilkinson (1985) to conclude that "the single most important activity for building the knowledge required for eventual success in reading is reading aloud to children" (p. 23).

This conclusion, however, did not go unchallenged. In 1994, Scarborough and Dobrich reexamined studies in which measures were made of both parent-child joint reading and of language or literacy skills in children's preschool years or later. They reported "modest strength and considerable variability of results in the 31 research samples" (p. 285). In particular, they argued that when differences in indices of socioeconomic status, early interest in literacy, and preschool language and literacy abilities are taken in account, differences in frequency of parent-child joint reading make "only negligible unique contributions" (p. 262) to prediction of children's success in learning to read.

Subsequent to Scarborough and Dobrich's investigation, Bus, vanIJzendoorn, and Pellegrini (1995) conducted a meta-analysis of 29 studies of parent-child joint reading and reported that the combined effect sizes for all studies involved amounted to $d = 0.59$ (33 samples, including 3,410 subjects). They concluded that their results provided a "clear and affirmative answer to the question of whether or not parent-child joint storybook reading is one of the most important activities for developing the knowledge required for eventual success in reading" (p. 15). They suggested that the disagreement between their findings and those of Scarborough and Dobrich could be attributed to the differences in methodological approaches and the superiority of a quantitative meta-analysis that "takes the accumulation of trends into account" (p. 15).

Bus et al. further concluded that their findings provide "straightforward support for family literacy programs" (p. 15). In school systems in the United States and in other countries, reading educators, school administrators, and community leaders have reached the same conclusion, and as a result, family literacy intervention programs are increasing, with most designed to teach parents and children to engage in family storybook reading as the literacy event most likely to lead children to eventual school success. In their evaluation of Even Start Programs, the largest federally funded family literacy initiative in the United States, Tao, Khan, Gamse, St. Pierre, and Tarr (1998) found that of 469 sites reporting, 94% offered reading, storytelling, and prereading activities to most of their families and 90% offered language development activities to most families. In addition, nearly 90% of the programs reported teaching all or some families to work with letters and numbers.

Should we assume that we are moving in the right direction? Is it right to expect all families to embed mainstream literacy practices within their daily routines? Are there any negative consequences to their doing so? What have we learned about culturally and linguistically diverse families and the ways they use literacy that should guide us in our plans and actions to collaborate with them? In the next section, I address studies that are helpful in answering these questions.

Emerging Understandings About Parents' Roles in Children's Literacy Learning

Luis Moll and his colleagues (1992) have raised awareness of our need as educators to better understand what they have referred to as "household funds of knowledge," defined as "historically accumulated and culturally developed bodies of knowledge and skills essential for household or individual functioning and well-being" (p. 133). They explain,

> Our analysis of funds of knowledge represents a positive (and, we argue, realistic) view of households as containing ample cultural and cognitive resources with great, potential utility for classroom instruction.... This view of households, we should mention, contrasts sharply with prevailing and accepted perceptions of working class families as somehow disorganized socially and deficient intellectually; perceptions that are well accepted and rarely challenged in the field of education and elsewhere. (p. 134)

What evidence exists that shows that when we widen the lens and look beyond mainstream literacies, we find a rich tradition of literacy behaviors and other funds of knowledge, albeit different from those that easily map onto the literacy behaviors that characterize most preschool and primary grade classrooms?

Shirley Brice Heath (1983) was one of the first educational researchers to examine the ways class and culture influence literacy practices. In her well-known and widely cited 10-year ethnographic study of two communities in the Piedmont Carolinas, which she referred to as Roadville and Trackton, Heath examined the effects of preschool home and community environments on the learning of literacy and language structures needed in classroom and job settings. Although she observed rich literate traditions in both communities, she found these to be unlike the literate events common in the mainstream community she called Maintown. Unlike Maintown parents, she observed that Roadville parents

> do not extend either the content or the habits of literacy events beyond book reading. They do not, upon seeing an item or event in the real world, remind children of a similar event in a book and launch a running commentary on similarities and differences. (Heath, 1986, p. 109)

Trackton, too, differed in substantial ways in its literate traditions:

> There are no bedtime stories; in fact, there are few occasions for reading to or with children specifically. Instead, during the time these activities would take place in mainstream and Roadville homes, Trackton children are enveloped in different kinds of social interactions. They are held, fed, talked about, and rewarded for nonverbal, and later verbal, renderings of events they witness. Trackton adults respond favorably when children show they have come to know how to use language to show correspondence in function, style, configuration, and position between two different things or situations. (Heath, 1986, p. 120)

Heath concluded that Trackton and Roadville children struggled in school not because they were language- and literacy-deprived, but rather because they were language- and literacy-different. Unlike their mainstream peers, the children of Roadville and Trackton did not begin school with the knowledge of language patterns and literacy events that are valued and privileged in most classrooms.

Denny Taylor and Catherine Dorsey-Gaines (1988) conducted a study of African American children living in urban poverty who were perceived by their parents to be successfully learning to read and write. They observed that the children and their parents used literacy in ways that were integrally related to the accomplishment of routine tasks in their daily lives—they read, wrote, and drew for genuine and meaningful purposes. The connectedness and embeddedness of their home literacy events, however, stood in stark contrast to the learning activities the children encountered in school. Here, their literacy and language activities were decontextualized, fragmented, and, importantly, disconnected from the real events of the children's lives outside of school. Over time, the children experienced school failure. Their observations of the children at home and at school led Taylor and Dorsey-Gaines to comment, "We are overwhelmed by the fragmentation that takes place as they move from the hopes of their families and the promise of their early years through an educational system that gradually disconnects their lives" (p. 121).

William Teale (1986) also examined the reading and writing behaviors of children and other family members in low-income, urban homes. Like Heath and Taylor and Dorsey-Gaines, Teale's observations led him to conclude that "virtually all children in a literate society like ours have numerous experiences with written language before they ever get to school" (p. 192). Also like Heath and Taylor and Dorsey-Gaines, Teale found that the children used literacy to "mediate Daily Routines" (p. 195) and get things done in the course of their daily lives; he found that social institutions (for example, church, government, and school) largely influenced uses of literacy at home. However, although the families were similar in their almost universal practice of literacy, they differed widely in the frequency of literacy events. He concluded that "in sheer quantitative terms, some children had the opportunity to observe much more reading and writing going on around them than other children" (p. 192). Finally, like the children of Trackton, only three of the children in Teale's study engaged in storybook reading at home on a consistent basis. Yet again, the importance of storybook reading in judging children's preparedness for success in school was underscored by the finding that these three children achieved the highest scores on tests of emergent literacy.

In a more recent study, Purcell-Gates (1996) examined the home literacy experiences of children in low-income families. With findings similar to Teale's, she observed that although there was evidence of some print use in each of the 20 families, the purposes, and particularly the frequency, of literacy events varied widely. The families used print most often in the context of entertainment (e.g., playing board games, reading *TV Guide*) and to mediate daily routines, and rarely in the context of work. She also observed that most texts read were those at the word and clausal level: coupons, advertisements, food labels, and so forth. Purcell-Gates challenged the notion that "literacy is literally interwoven into all people's lives in a literate society such as ours. Some families in this study, in fact, lived busy and satisfying lives with very little mediation by print" (p. 425).

Whereas investigations such as these have been used to support arguments that we need to broaden the lens through which we observe the literate traditions in culturally and linguistically different families, other studies bring into question the widely held assumption that parents who are linguistically or culturally different from mainstream parents are less interested or less involved in their children's education. In her ethnographic study of 10 Latino families, Guadalupe Valdés (1996) reported the many ways the educational practices in these families were in conflict with, or at least incongruent with, the actions expected of them by mainstream teachers. The parents Valdés observed and interviewed were seldom observed to "teach" their children about literacy, either formally or informally; they could not be counted on to suspend household chores so that children could do a special homework project, and teachers' requests for special items or for parents' attendance at special functions often went unheeded as the parents attended to essential family routines or activities. Yet, the parents were clearly interested in and dedicated to their children's learning. Rather than the teaching of literacy, however, the mothers took as their responsibility what Valdés reported as "la educación de los hijos" (the moral education of their children), which included

> teaching children how to behave, how to act around others, and also what was good and moral. It included teaching the expectations of the roles that they would play in life and the rules of conduct that had to be followed in order to be successful in them. (p. 125)

As with the earlier studies, what stands out in Valdés's report is the depth of misconception there is in common understandings about the beliefs and values nonmainstream families hold about their children's education. In her words,

> It is true that the families were not producing successful schoolchildren. It is true that there were many things they did not know about American schools and American teachers. It is also true that they were poor and they were struggling to survive. What is not true is that the parents in

> the study were bad parents, or that they did not know how to parent well, or that they did it poorly. The 10 mothers loved and cared for their children and were intensely concerned about their rearing and their future. The nine fathers worked hard to earn a living, sometimes under difficult and painful circumstances. Both fathers and mothers wanted their children to have more and to suffer less than they themselves had suffered as both adults and children. (p. 200)

In helping their children to achieve better lives, Valdés explained that the mothers "were guided by beliefs about child rearing that emphasized respect and obedience. They did not understand the mother's role to include teaching school lessons to her children" (p. 201). Based on her knowledge of the families she studied, Valdés concluded, "It is difficult for me to imagine a family intervention program that would not seriously damage the delicate balance they maintained" (p. 200).

Purcell-Gates (1995) also reported profound misunderstandings regarding what parents know and understand about literacy and schooling. Her 2-year study of one family in a midwestern Appalachian community and her observations of a child's struggle with literacy learning and his mother's failed attempts to work effectively with her child's teachers led Purcell-Gates to draw the following conclusion:

> Operationally, in terms of literacy learning, social and moral judgments based on ignorance of a cultural group most often result in pedagogical decisions and moves that are uninformed, inappropriate, and hence ineffective. From the school's cultural perspective, Donny's problems stemmed from the fact that he was one of those "hillbillies," not from the different schema he had about written language and its purposes and possibilities. His mother's concerns about his progress were not perceived (in the sense of being accorded legitimacy and acted upon) because, according to the prevailing stereotype, she was an "ignorant river rat," did not know or care about education, and was a dysfunctional parent in any case. (p. 189)

Gallimore and Goldenberg (1993) used the concept of activity setting to examine the literacy experiences of children in low-income Spanish-speaking homes. They explained that "everyday activities embed opportunities to learn and develop through modeling, joint production, apprenticeship, and other forms of mediated social learning that are embedded in goal-directed interactions" (p. 315). As part of their analysis, they observed the people present during each activity and the salient cultural values, operations, and task demands of the participants. Their analysis led to several important findings. First, as others before them had reported, they observed that despite generally low educational levels among the parents, the parents valued their children's education, were available to assist the children, and were interested in and capable of supporting the children's literacy learning. However, despite the parents' interest in and capacity for supporting their children, Gallimore and Goldenberg found relatively few experiences that would likely lead the children to success in school.

Given this evidence, Gallimore and Goldenberg then asked what would happen if teachers sent storybooks home? Would a teacher-prompted literacy event increase the kinds of interactions believed to be optimal for literacy development? To answer their questions, they collected data on parents of children in two groups of classrooms. In one group, teachers sent home little books, *libritos*, for the children to read at home; in the other group, teachers followed the district curriculum, which emphasized instruction in sound-letter associations. The researchers found that the type of material sent home by teachers influenced the scripts parents followed. Parents used more language in book reading than in the conventional copying and letter-learning activities. Gallimore and Goldenberg observed that few interactions focused on the meaning of text; rather, parents directed children's attention to word-level features. They concluded that parents' conceptions of how children learn to read, rather than the materials themselves, may be more influential in framing their literacy interactions with their children.

In summary, when we widen the lens and look beyond mainstream literacies, we find Moll and his colleagues are right—across different families, different cultures, and different contexts, researchers have observed a rich tradition of literacy behaviors and other funds of knowledge that, although different from mainstream literacies, if understood, acknowledged, and appropriately built upon by teachers, might lead linguistically and culturally different children to more successful school experiences than many of them now have.

Making Sense of What We Knew Then and What We Know Now

So, what have we learned about parents and their role in children's literacy learning that we did not know or understand 10 or 20 years ago? How might the collection of aforementioned studies help us to better understand the role parents play (or *could* play) in their children's school success?

It seems that there are three critical conclusions to be drawn from existing studies. First, the importance of storybook reading in early literacy success is undisputed. In studies old and new, children who have had many and diverse experiences in storybook reading do well on school-based measures of literacy. However, the assumption that the absence of storybook reading, and any associated poor performance on tests of emergent reading, is indicative of "low-literate" home environments is not supported by research. Instead, the evidence leads us to a second conclusion: Although mainstream literacy practices may be absent in many homes, there are other rich and varied literacy and language practices that are embedded in the fabric of children's daily lives. Such practices go largely unnoticed, and therefore are not built upon by classroom teachers. Third, issues of language, culture, and class influence the ways parents and children use literacy and the ways they understand schooling. Family traditions and routines do not necessarily allow the practice of literacy and other educational events in the ways mainstream teachers expect. Nonetheless, there is strong evidence that parents from all cultural, linguistic, and class groups perceive education to be of critical importance in their children's lives.

So, how do we begin changing the ways we think about and work with parents? To start, the studies suggest the need for a new and more useful definition of literacy. In a recent article, a group of 10 scholars who called themselves The New London Group (1996) suggested that the word *multiliteracies* might help to create a different kind of pedagogy:

> What we might term "mere literacy" remains centered on language only, and usually on a singular national form of language at that, which is conceived as a stable system based on rules such as mastering sound-letter correspondence. This is based on the assumption that we can discern and describe correct usage. Such a view of language will characteristically translate into a more or less authoritarian kind of pedagogy. A pedagogy of multiliteracies, in contrast, focuses on modes of representation much broader than language alone. These differ according to culture and context, and have specific cognitive, cultural, and social effects. (p. 64)

With the concept of multiliteracies at the core of teaching and learning, and particularly, at the core of learning how to collaborate with parents, we might begin to explore what parents and children do together through a broader lens, looking not only for evidence of actions and practices that we know to lead seamlessly to school-based literacy, but also looking beyond, to actions and events that extend children's literate lives in less common, but no less important, ways. In working with families to learn about literacy, we might begin with an expectation that we, as teachers, will exchange, rather than prescribe, ways of knowing. This is an idea that may not yet have caught on, but it is not new. Therefore, we can look to some promising practices to guide us. In this section, I will present some of those works.

Earlier, I cited the work of Moll and his colleagues in identifying what they referred to as "household funds of knowledge." Let us take a closer look at how these educators built on the traditional practice of home visits to develop a reciprocal relationship with parents and other household members. Although this work has been published widely (Gonzalez et al., 1995; Moll et al., 1992; Moll & Greenberg, 1991; Vélez-Ibánez & Greenberg, 1992), for the purpose of this discussion, I have drawn primarily from the report by Gonzalez et al. (1995). In this report, Gonzalez and her colleagues explained that the visits they describe are not intended to teach parents to do particular activities, to inform them of their children's school performance, or to discuss problems. Rather, these are research visits "for the express purpose of identifying and documenting knowledge that exists in students' homes" (p. 444). In essence, this work turns the traditional concept of parent-teacher partnerships on its head; instead of perceiving parents as learners, to whom important information, ideas, strategies, and practices must be transmitted, in this project, teachers view themselves as learners, visiting families to discover what they know, what they do, and how they do it. In so doing, teachers acquire information that allows them to build on students' prior knowledge. They also have opportunities to perceive families in different ways. In the words of one teacher,

> As I read and reread some of the early entries I made for this project, I realize how I have changed my views of the households. As I read these entries, I realized that I had discussed my students in terms of low academics, home-life problems, alienation, and SES, and that I was oriented toward a deficit model. I no longer see the families I visited that way. Since I am looking for resources, I am finding resources, and I recognize the members of the families for who they are, and for the

> talents and unique personalities. We now have a reciprocal relationship where we exchange goods, services, and information. (p. 461)

Of course, there are obstacles to carrying out work like that of Moll and his colleagues, and the greatest obstacle identified by the teachers was time. In this particular example, the teachers visited households three times and interviews lasted an average of 2 hours. Then, teachers recorded field notes and participated in study groups with their colleagues. It is not a quick fix to learning about families, but the evidence suggests it has the potential to be an effective one.

Of interest, too, are programs that have come to be called intergenerational or family literacy programs. As such, they are explicitly designed to support the literacy development of both parent and child. Although these programs risk being identified—and in fact, being implemented—as deficit-model programs that are aimed at teaching family members the literacy skills they are perceived as lacking, there are some that are founded on what Auerbach (1995) has referred to as a multiple literacies perspective, that is, an understanding that "whatever their literacy proficiency, participants bring with them culture-specific literacy practices and ways of knowing" (p. 651). It is such programs that I will describe here.

Project FLAME—Family Literacy Aprendiendo, Mejorando, Educando (Learning, Bettering, Educating)—provides literacy training to parents not yet proficient in English so they can support their children's literacy learning (Shanahan, Mulhern, & Rodriguez-Brown, 1995). Although Project FLAME is clearly based on teaching parents how to support their children in the acquisition of school-based literacy behaviors (including sessions on creating home literacy centers, book sharing, library visits, teaching the ABCs, and helping with homework), parents' personal perspectives and cultural knowledge provide an essential foundation for literacy conversations. Autobiographical writing provides the content for books that they share with their children. Acknowledging the rich social networks and close affiliations of Latina women, Project FLAME's classes are group based, intended to become extensions of the mothers' social lives. Collaborative learning provides opportunities for participants to share the multiple literacies of their home lives. Low teacher-parent ratios allow parents who are newly literate in their first language as well as in English to receive the assistance they need to make advances in their literacy and language knowledge.

The effectiveness of Project FLAME is evident in a number of indicators: Project evaluations indicate improved English proficiency for parents and significant improvements in children's knowledge of basic concepts, letter names, and print awareness. Elementary teachers report that parents who participate in Project FLAME come to school more often, are more likely to volunteer, and seem to implement teacher suggestions more readily. Parent interviews and home observations indicate that parents are more active in their children's education and have more literacy materials in the home.

Similar to Project FLAME, parents and other caregivers who participate in the Intergenerational Literacy Project (Paratore, 1993, 1994, 1995) join together in daily classes to practice reading, writing, and speaking in English and to learn about U.S. education and ways they can support their children's literacy learning. Now in its 12th year, this project has supported more than 1,300 families primarily from Latino cultures, but also including families from Southeast Asian, Bosnian, African, and many other immigrant groups. To connect the new literacies they are learning with those they already know, learning experiences are situated within the routines of daily life. There is, therefore, no established family literacy curriculum. Rather, parents read and write in response to issues and texts that they identify as important to them on an ongoing basis. These may include health-related materials, notices from their children's schools, and newspaper and magazine stories or articles. There are, however, prescribed instructional practices for the classes: In small and large groups, adults read every day, share their responses to the reading in large and small groups, and write every day. They also keep and share a daily log of their literacy interactions with their children. Although their reading in class is always in English (a decision made because of the difficulty in obtaining texts in the multiple languages of class members), the conversations that revolve around the texts may take place in language-alike small groups.

As in Project FLAME, there are multiple indicators of the success of this project. In addition to high and consistent rates of attendance (73% over the first 10 years of the project) and a low rate of attrition (17% over the first 10 years of the project), studies indicate rapid growth in adults' English reading fluency, steady growth in oral and written English proficiency, and steady increases in the practice of reading and writing with their children at home (Paratore, 1993, 1994, 2000). An in-depth study of the home and school literacy experiences of 12 children whose parents participated in the project found 8 of the 12 children to be experiencing high or moderate rates of success in school (Paratore, Melzi, & Krol-Sinclair, 1999). The four children who were struggling in school all were found to be confronting multiple and complex problems, among them learning disability, divorce, homelessness, and drug abuse.

The Pajaro Valley experience (Ada, 1988) provided groups of Spanish-speaking parents, varying in number from 60 to 100, a monthly opportunity to meet to discuss children's literature and to read stories and poems written by the children and the parents. Of note is the previous literacy experience of the parents who participated; most had little schooling, and many had never before read a book. The meetings were held in a library and were framed as special events: Children were sent home from school with invitations (in Spanish) for their parents. At the same time, parallel meetings and activities were offered for the children, which accommodated parents' needs for child care. Finally, before the meeting, personal telephone calls were made to parents, reminding them of the invitation and offering transportation arrangements.

At a typical meeting, parents began by discussing an issue of importance to them, and then they formed small groups and read and discussed a children's book that in some way related to the issue(s) discussed. They were also provided blank books where they wrote their own stories at home. Results indicated that parents began to read aloud to their children at home, children brought more books home from the school library, and parents and children increased their visits to the public library. Parents also requested (and received) opportunities to purchase the books they were reading for their children. Anecdotally, parents reported that as a result of family storybook reading, their children were more enthusiastic about school and reading, parents and children became closer to each other, and parents discovered that there is much to learn even from simple stories. Parents also reported increased confidence in their interactions with teachers.

Krol-Sinclair (1996) also built on the research related to the importance of storybook reading, but she did so with an important difference: Her work with parents was intended to prepare them to be classroom storybook readers. By so doing, Krol-Sinclair hoped to accomplish three goals: (1) to introduce parents to effective storybook reading strategies that they could use in the classroom, as well as at home with their children; (2) to provide them access to classrooms in the schools attended by their children so that they could become familiar with the culture of U.S. classrooms; and (3) to create a context in which mainstream teachers could broaden their views of the language and literacy knowledge of immigrant parents. As in Ada's project, the parents who participated in Krol-Sinclair's investigation had fewer than 6 years of formal schooling and were not proficient readers in either Spanish or English. To prepare for their classroom storybook reading event, they attended a training session as a group 1 day each week. During this session, they were introduced to effective storybook reading strategies, chose a book they wished to read, and rehearsed it with a partner. When they entered the classroom on a subsequent day to read to the children, they were introduced by the classroom teacher, who often participated by observing the session and, occasionally, by offering comments during the read-aloud.

Audiotapes of classroom and home storybook readings and interviews with the parents and with the classroom teachers revealed several positive outcomes. Parents used the storybook reading strategies they had been taught in the classroom at home in their family storybook reading times. In addition, parents became familiar with what Corno (1989) called "classroom literacy" (p. 29)—that is, they were able to articulate classroom routines, how children interact with text at school, and how children learn to read. Also, parents found the experience affirming and viewed their classroom storybook reading as evidence that they had something to offer to their children's school. The teachers who participated reported increased awareness of the commitment that parents have to reading with children and helping children develop their literacy. Krol-Sinclair noted, however, that "none of the teachers reported that having parents read to the students in their classrooms was important for their own understanding of the ways parents and children engage in literacy" (p. 281); further, no teachers "reflected on how they could build on the experience in attempting to link literacy at home and at school" (p. 281).

Madrigal, Cubillas, Yaden, Tam, and Brassell (1999) implemented a book loan program as part of a larger effort to provide multiple learning opportunities for Spanish-speaking preschool-age children. Underlying their work was an assumption that parents were interested in and capable of reading to and with their children, but that financial, time, and transportation constraints limited their access to books. Madrigal et al. sought to minimize such constraints by establishing a lending library (with a large selection of books in Spanish) within the walkway directly across from the children's preschool classrooms, thus providing access to the books for both parents and children when entering or leaving the classroom. A member of the preschool staff assisted parents with checking out books. Data confirmed the researchers' assumptions regarding parent interest: 70% of eligible children and their parents participated in the book loan program and two parent receptions/ reading demonstrations were attended by 100 parents. Six of the eight most popular books were Spanish titles, underscoring the importance of first-language and culturally relevant materials.

The work of Shockley, Michalove, and Allen (1995) stands out from other studies described in this section in that these teacher-researchers did not set out to work with children who were predicted to experience or who were already experiencing difficulty in school. Rather, as first- and second-grade teachers and researchers, they sought to bring parents, teachers, and children together to support every child's opportunities to learn. At the heart of their work with parents was a respectful dialogue, which began the first day of school when Betty Shockley, a first-grade teacher, sent an invitation to parents to "tell me about your child" (p. 8). This first contact began a year-long dialogue that included home reading journals, in which, 3 nights a week, parents and children recorded their responses to their shared homework assignment: to read, talk, and write about a book of the child's choosing. Home-school dialogue continued through family stories, which children were invited to share each day during storytelling time and parents also were invited to write for inclusion in a class book. The dialogue concluded with a learning album assembled at the end of the year. It included a set of parallel questions about the child's literacy learning answered separately by parent and child. The learning album was sent on to the second-grade teacher for her to read and learn from. Finally, seven meetings were held throughout the school year, identified as adult literacy conversations. These were intended to help teachers understand what parents believed was important about literacy and schooling. Shockley et al. emphasized the reciprocal purpose in their approach:

> In developing our partnerships with families, we were not trying to impose our vision of literacy but to develop relationships with families where we could learn about what already existed in the families and connect that with the literacy classroom community. We were trying to learn from parents what literacy events were important in their lives

> and share with them the important literacy events in their children's school. (p. 94)

Anecdotally, parents praised the efforts of these teachers to bring home and school together, noting that the reading journals gave them a way to judge their children's progress and that the teachers personal responses to them helped to maintain their children's interest in school and to develop a genuine and meaningful relationship with the teacher. In reflecting on their work, Shockley et al. concluded,

> Programs are implemented; partnerships are developed. Programs are adopted; partnerships are constructed. Parent involvement programs as America's schools have implemented them have serious problems. By their very nature, most programs have steps, elements, or procedures that become static. A program cannot constantly reinvent itself, change each year, be different in every classroom, and for every teacher-family-child relationship. Yet schools and parents have a shared and vested interest in children that almost demands some kind of collaboration. We believe...that this shared responsibility should be a genuine partnership. (p. 91)

A key element in each of the programs described is the reciprocity between parents and teachers. Although each program emphasizes uncovering the richness already present in the families of the children we teach, each also emphasizes teaching the skills and conveying the knowledge children need to succeed in U.S. schools. As Lisa Delpit (1995) forcefully reminds us,

> Students must be taught the codes needed to participate fully in the mainstream of American life, not by being forced to attend to hollow, inane, decontextualized subskills, but rather within the context of meaningful communicative endeavors; that they must be allowed the resource of the teacher's expert knowledge. (p. 45)

Conclusion

How do we make promising practices such as those cited more commonplace in our schools so that we may effectively bring parents and teachers together to help every child achieve school success? In each case, the practices described take time from the lives of busy teachers and busy parents; in some cases, they take funding for special activities or events;

in all cases, they require careful thought and reflection, perhaps a good deal of background reading, and certainly, opportunities to engage with others in conversation and response. Although all the practices would likely be most beneficial if implemented by a community of learners, a single teacher and a single parent could do any effectively alone. More than a decade ago, Joyce Epstein (1986) concluded an article on parent involvement with a restatement of several facts that emerged from the study, and perhaps the most important among them was the following:

> Parents' education did not explain their experiences with parent involvement unless teacher practices were taken into account. In the classrooms of teachers who were leaders in the use of parent involvement, parents of all educational levels said they were frequently involved in learning activities at home. (p. 291)

This fact brings us once again to what is, perhaps, the most commonly reached conclusion in education: When all is said and done, the teacher makes the difference. Knowing this to be true, let us do all that we can to improve on the old ways and continue to explore new ways to bring home and school literacies together so that all children can gain access to the abundance of riches in our society.

Questions for Discussion

1. Interview a principal and two or three teachers from the same school about their home-school partnership initiatives. Are there practices and procedures in place that are likely to lead to the reciprocal learning that characterizes effective partnerships? Which of the practices are likely to help teachers learn about the family and their literacy practices and routines? Which of the practices are likely to help parents learn about the skills and strategies that they might use to help children succeed in school?
2. Interview three or four parents of children from one classroom about their perceptions of their roles in their children's school learning and about the ways they help their children in school. Are their perceptions and actions consistent with what their children's teacher expects of them? Are the home-school initiatives that are in place sufficiently helpful to parents in meeting the teacher's expectations?

3. Conduct one or two home visits for the purpose of finding out what the families know, what they do, and how they do it. Consider what you learn in light of the classroom literacy curriculum and related instruction. How might you use the information collected during the home visit to influence what you teach and how you teach it?
4. If you were to conduct an evaluation of programs designed to help parents support their children's literacy learning, what criteria would you use to frame the evaluation?

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Chapter 4

The Importance of Effective Early Intervention

Dorothy S. Strickland

The Case for Prevention and Intervention

Few would argue that learning to read is the most important accomplishment of a child's early elementary school experience. Fortunately, by the time most children enter fourth grade, they have learned to read with sufficient comprehension and fluency to approach new material with confidence. For these children, learning to read and write follows a relatively predictable pattern. Their success can be traced to a variety of attributes and experiences, some of which preceded their formal schooling: (a) They have normal or above average language skills, (b) they come from homes that provide them with a fair amount of motivating and pleasurable experiences with books and literacy, and (c) the schools they attend offer experiences that help them understand and use reading to make meaning with print and offer frequent opportunities to read and write. Although some of these children may have periodic difficulties with specific aspects of literacy learning, their overall progress is steady and sure. As they encounter the more formal and complex tasks involved in conventional reading and writing, influences at home and school help these children build successfully on their early experiences with literacy (Snow, Burns, & Griffin, 1998).

For some children, however, learning to read can be difficult and unrewarding. The reasons for this vary widely. Acquiring literacy may be especially challenging for children with a history of preschool language impairment (Scarborough, 1998), children with limited proficiency in English (August & Hakuta, 1997), children whose parents had difficulty learning to read (Gilger, Pennington, & DeFries, 1991; Vogler, DeFries, & Decker, 1985), children with attention deficit hyperactivity disorder (Shaywitz, Fletcher, & Shaywitz, 1995), children who lack motivation to read (Snow, Barnes, Chandler, Goodman, & Hemphill, 1991), and children from poor neighborhoods (Teddlie, Kirby, & Stringfield, 1989).

However, although one or more of these factors are often present when children are experiencing difficulty learning to read, none is an automatic barrier to literacy development. For example, although low achievement is a widespread problem among poor children whose first language is not the language of instruction, it is likely that neither linguistic differences nor poverty alone is solely responsible for the high degree of risk faced by these children.

One important reason for the current emphasis on early intervention (i.e., programs designed to positively influence the course of language and literacy development in children age 0–8) is the research evidence indicating that a pattern of school failure starts early and persists throughout a child's school career. Longitudinal studies (Juel, 1988) show that there is an almost 90% chance that a child who is a poor reader at the end of grade 1 will be a poor reader at grade 4. These children grow to dislike reading and, therefore, read considerably less than good readers both in and out of school. This is an important finding, because time spent reading is highly correlated with achievement in learning to read (Allington, 1980; Anderson, Wilson, & Fielding, 1988; Stanovich, 1986; Stanovich & Cunningham, 1998).

Another compelling reason to promote early intervention is the realization that supplementary remedial programs such as Title I and "replacement" programs that substitute for regular, in-class instruction have had mixed results (Johnston, Allington, & Afflerbach, 1985). Some researchers suggest that such programs complicate the process for the struggling reader by offering approaches to reading that are philosophically different from those offered in the classroom (Santa & Hoien, 1999). Regardless of the reason for a child's failure in reading, educators recognize their responsibility to provide programs that preempt potential problems early and thwart the potential for a chain of failure throughout the school years.

Specific Programs

A variety of approaches to prevention and intervention have reported some positive results. We acknowledge that in many cases there are competing claims about the level or quality of their achievements. However, the purpose here is not to enter into that debate, but to offer these as examples of well-known programs that have undergone serious scrutiny and report some evidence of success. References for those reports are cited after each description.

Family-oriented prevention programs tend to focus on both parents and their young children. Such programs may be located in a variety of settings and often target a number of outcomes in addition to language and literacy. As the focus shifts from prevention to intervention, most programs are found in school settings. Many employ small-group instruction, whereas others restrict instruction to one-on-one tutoring models. Some intervention programs take place in the regular classroom with instruction supplied by the regular classroom teacher or by a reading specialist. Others occur outside the regular classroom and make use of reading specialists or well-supervised volunteers or paid tutors. Some programs are linked to classroom instruction, as is Success for All's tutoring component (Wasik & Slavin, 1993). Others, such as Reading Recovery and Book Buddies, do not attempt to foster a tight curriculum link (Invernizzi, Juel, & Rosemary, 1997). Success has been demonstrated in a variety of settings, including large urban districts, small suburban schools, and rural areas. Brief descriptions of several prevention and early intervention programs follow. The list is by no means exhaustive. Programs were selected to be illustrative of the various kinds of efforts in existence that report some measure of success based on research findings.

Family Literacy Programs

The Even Start Family Literacy Program consists of a variety of family literacy projects established for the purpose of integrating early childhood education and adult education for parents into a unified program. There are four features that have been found to be critical to the success of these programs: (1) Steps must be taken to ensure participation through such means as providing transportation and child care and attention to possible emotional barriers such as fear of school and low self-esteem; (2) the curriculum must be meaningful and useful to the participants; (3) the staff must be stable and highly capable; and (4) there must be ample funding to ensure that the program is sustained over time (DeBruin-Parecki, Paris, & Siedenburg, 1997).

Home Instruction Program for Preschool Youngsters (HIPPY) is a home-based instruction program designed to help parents provide their children with school readiness skills. Parents and children engage in a variety of reading-related activities. Components of HIPPY, such as home visits and parent education, have been adapted into many other family literacy programs (Baker & Piotrkowski, 1996).

Prekindergarten and Kindergarten Programs

Head Start is the most widely known early intervention program for economically disadvantaged children. Although Head Start programs vary widely, they all strive to provide a range of comprehensive services for children and families, including a "developmental" curriculum. Like many other programs designed for children in poverty, Head Start programs often produce immediate effects for reading achievement that then tend to decline over time. Nevertheless, some programs have produced sizable gains that persist into the school years. The magnitude of initial effects appears to be related to a program's intensity, breadth, and attention to the involvement of the children's parents (Bryant, Lau, Burchinal, & Sparling, 1994).

High Scope (Perry Preschool Project) is a comprehensive preschool program that focuses on language development. The curricular approach is based on Piagetian theories of child development and focuses on key experiences designed to create opportunities for children to learn key concepts (Berrueta-Clements, Schweinhart, Barnett, Epstein, & Weikart, 1984).

Whitehurst's Emergent Literacy Intervention is an early literacy intervention program for preschool and kindergarten children. The program has two components: dialogic reading and phonemic awareness, the understanding that speech is composed of individual sounds. The dialogic reading component involves interactive storybook reading and the use of open-ended questioning strategies that focus on comprehension rather than on simple recall of facts (Whitehurst et al., 1994).

Primary Grade Programs (Grades 1–3)

Book Buddies is a supplementary intervention in which selected children receive one-on-one tutorials twice a week in addition to classroom reading instruction, using community volunteers as tutors. Tutors receive continuous on-site training and supervision. The four-part lesson consists of repeated reading of familiar text, word study (phonics), writing for sounds, and reading a new book (Invernizzi et al., 1997).

Early Reading Intervention (ERI) is a tutoring program that targets first and second graders at risk for failure to read. The program is organized to enable a small group of students to work with their teacher 15 to 20 minutes a day, 3 days a week. The children also read individually to instructional aides, volunteers, or older students for 5 minutes each day. The program focuses on word analysis strategies in the context of reading storybooks. Opportunities for rereading through choral reading or partner reading are offered (Taylor, Strait, & Medo, 1994).

First Steps is a one-on-one tutoring program based on many of the principles of Reading Recovery. The 30-minute tutoring sessions consist of book reading in which the child rereads a book from a series of leveled books; a word study component in which the tutor takes the child through a series of letter and word sorts based on need and level of development; a writing activity; and the reading of a new story (Morris, 1995; Santa & Hoien, 1999).

Reading Recovery is the best known and researched beginning reading intervention program. Designed for first graders, it involves one-on-one tutoring by teachers who receive extensive training in theory and practical approaches to working with children experiencing difficulty learning to read. The lessons involve rereading of previously read books, independent reading of a new book introduced in a previous lesson, word analysis and comprehension strategies, writing and reading of the child's own sentences, and the introduction and supported reading of a new book (Pinnell, DeFord, & Lyons, 1988).

Schoolwide Programs

Success for All is a comprehensive school-restructuring program that serves students at risk for failure in grades 1 through 6. It includes a prekindergarten and kindergarten program, a Beginning Reading or Reading Roots program, and a Beyond the Basics or Reading Wings Program. The program includes a mixture of phonics, direct instruction of comprehension strategies, and listening comprehension skills. Cooperative learning strategies are integrated heavily throughout the curriculum, as are one-on-one tutorials (Slavin et al., 1996).

The Kamehameha Early Education Program (KEEP) Whole Literacy Curriculum was designed for Native Hawaiian students in kindergarten through grade 6. This program addresses issues faced by at-risk children facing similar challenges. It includes readers' and writers' workshops, portfolio assessment, word-reading and spelling strategies, voluntary reading, and established literacy benchmarks for student success. The ongoing staff development of teachers before and during implementation is stressed heavily (Au & Carroll, 1997).

Characteristics and Components of Prevention and Intervention Programs

A limited number of existing prevention and intervention programs are described in this chapter; yet, in looking at these programs, it becomes obvious that despite similar goals, implementation varies widely. Nevertheless, several examinations of the characteristics of successful prevention and intervention programs reveal a fair degree of agreement regarding essential elements or components that receive attention (Duffy-Hester, 1999; Pikulski, 1994; Snow et al., 1998; Wasik, 1998). Following are brief descriptions of these components. These have been divided into two categories: those considered key to the overall implementation of the program and those that relate more specifically to curriculum content. The curriculum components are further divided among those stressed in family literacy, prekindergarten, and kindergarten prevention programs and those that receive emphasis in early intervention programs designed for the primary grades.

Implementation Components of Prevention and Intervention Programs

Timing. Early intervention is preferable to extended remediation. Age-appropriate efforts aimed toward prevention and intervention begin during the prekindergarten years and receive special emphasis during the early primary grades.

Time. Struggling readers and writers receive more time on task than children not considered at risk. Most school-based interventions for reading occur on a daily basis for the duration of a school year or a good portion of the school year.

Materials. Students for whom intervention is warranted are given materials that they can handle successfully. Although materials vary widely among interventions, careful attention is given to their selection and use. Programs make use of materials characterized as predictable, phonologically regular, or linguistically regular, or those that are leveled or sequenced from easy to more difficult. Some programs make use of several types of texts, and some texts include a combination of these features. Programs generally strive for materials that are interesting and engaging and that provide a degree of challenge without frustration.

Nature of instruction. Lessons generally consist of a variety of activities involving a well-formulated and consistent plan or approach. One-on-one and small-group instructional formats are used widely. Activities usually include some rereading of previously read continuous texts, introduction of new texts, word study that includes phonics and other word recognition strategies, and writing.

Documenting and monitoring learning. Individual progress is monitored on a regular, ongoing basis. Students are generally evaluated in relation to a set of predetermined program goals, benchmarks, or levels.

Professional development. Although intervention programs vary widely in their training and use of personnel, the professional development of teachers, aides, and volunteers is considered an important component of the success of all intervention models.

Home-school connection. A systematic program of home support is characteristic of intervention programs. Many include a built-in monitoring system designed to provide feedback from the home.

Curriculum Components of Prevention Programs: Family Literacy, Prekindergarten, and Kindergarten

Learning to read and write does not begin in first grade. Long before formal schooling, parents and caregivers help lay the foundation for the development of essential cognitive skills and positive attitudes. Although programs designed to prevent failure in reading place emphasis on different components, there is some similarity in the overall nature of the curriculum. Curricular components generally include the following:

Language development with an emphasis on vocabulary and concepts. Extending children's vocabulary and discourse patterns involves both linguistic and cognitive development. Making sense of print requires the use of a combination of semantic, syntactic, and graphophonic cues along with background knowledge. Focusing on the development of vocabulary, concepts, and linguistic patterns helps children make good predictions about print. Children who have an abundance of opportunities to expand their language and linguistic repertoires are more apt to decipher words unknown to them as readers and to make sense of what they read (Halliday, 1975; Morrow, 1993).

Understandings about the functions of print. Children who realize the functional relevance of written language are more likely to be motivated to explore its use for their own purposes (Neuman & Roskos, 1989; Weiss & Hagen, 1988). Such purposes include writing notes and letters, reading newspapers and magazines, making and using lists, and using a television guide.

Print awareness and concepts about print. To make sense of written language, young learners need to acquire a general knowledge about reading and writing as representations of ideas, knowledge, and thoughts, as well as an understanding of how print works. Sensitivity to print in the environment is a significant first step toward developing an understanding of what it means to be a reader and writer. Print concepts are the conventions that govern written language, such as spaces between words, directionality, and punctuation (Galda, Cullinan, & Strickland, 1997).

Literacy as a source of enjoyment. The development of a positive view toward reading and other literacy experiences is important. Children who have positive attitudes and expectations about reading are more likely to be motivated to learn to read.

Knowledge of narrative structure. Knowledge of the structure of stories is important, because most of the material used to teach reading to young children is written in narrative form. Children are apt to understand material presented in a form with which they are familiar.

Storybook reading. Exposure to and enjoyment of good quality literature builds positive attitudes, expands language and concepts, and contributes to children's understanding of the reading process (Dickinson & Smith, 1994; Neuman & Roskos, 1989; Robbins & Ehri, 1994).

Knowledge of the alphabet. Knowledge of the alphabet is one of the best predictors of success in early reading. Research in this area suggests that alphabet knowledge is a byproduct of extensive early literacy experiences. Thus, simply teaching children the alphabet without rich literacy experiences has proven unsuccessful (Ehri, 1983; Venezky, 1975).

Phonemic awareness. Phonemic awareness involves knowledge of the individual sounds in spoken language. Research indicates that a child's ability to distinguish between phonemes is one of the best predictors of reading success (Stahl & Murray, 1994; Stanovich, 1994). Like knowledge of the alphabet, however, some research suggests that phonemic awareness is best learned within a context of a variety of literacy experiences (Moustafa, 1997).

Opportunities to write. Giving children opportunities to write helps foster both reading and writing development. Children's attempts at spelling provide opportunities to apply what they know about written language and develop new understandings about word structure and the relationships between language and print (Sulzby, 1986).

Curriculum Components of Early Intervention Programs (Grades 1–3)

Early intervention programs involve taking inventory of the components listed earlier and addressing those areas that require attention. Special emphasis is placed on the following:

- Reading comprehension strategies focus on the self-monitoring of texts and the use of fix-up strategies when misunderstandings occur. Some of the ways that children demonstrate their comprehension of texts involve retelling stories, making predictions, summarizing stories and books by briefly telling what they are about, and participating in discussions generated by comprehension questions.
- Word recognition strategies, including phonics and structural analysis, are addressed as essentials for skillful reading. Many programs stress phonics. Others emphasize experiences in a full array of strategies, such as the use of word meanings and sentence structure, combined with phonics, as tools for decoding unknown words.
- Fluency is addressed by helping students develop the ability to read expressively and meaningfully as well as accurately with appropriate speed.
- Writing is taught as an important path to word analysis skills, spelling, and self-expression. Writing is seen as a key to understanding the relationship between oral language and print.

Learning From Efforts at Prevention and Intervention: Implications for Policy and Practice

One of the key lessons learned from the research on intervention programs is that no matter how effective an intervention may be, it does not stand alone. The problems faced by children who are having difficulty in reading are rarely unidimensional—nor are the solutions. It is critical for schools and classroom teachers to build in a safety net for children experiencing difficulty so that they can be identified early and their problems addressed within the regular course of instruction. Some researchers even believe that "removing students from the regular classroom and placing them in resource rooms for special or compensatory education services prevents classroom teachers from realizing that something is wrong with the instruction in their own classroom" (Duffy-Hester, 1999, p. 491). Obviously, many children will require help from specialists outside the regular classroom. Nevertheless, the instruction received in the regular classroom will remain at the center of the child's literacy program.

In addition to strong "first teaching," ongoing special attention to children with persistent reading difficulties must take place in the regular classroom. Children who are given extra support outside the classroom often need continued support in the regular classroom after they are released successfully from the external support program. These children often remain vulnerable after they have "caught up" with their peers. Vigilance within the regular classroom is needed to support and maintain the gains they have made, and this must extend well beyond the primary grades.

The literature on prevention and intervention provides an abundant research base and a wealth of practical suggestions for educators, policymakers, and others as they consider how they might help alter school and classroom policy and practice to provide for the child who needs intervention (Allington & Walmsley, 1995; Duffy-Hester, 1999; Pikulski, 1994; Snow et al., 1998; Strickland, 1998a, 1998b; Wasik, 1998). The following suggestions are gleaned from the literature and organized around four areas: (1) school and classroom organization, (2) nature of instruction, (3) documenting and monitoring learning, (4) home-school connections, and (5) professional development.

School and Classroom Organization

A well-organized, articulated, and coordinated system of support services at the district, school, and classroom levels is essential for effective intervention. School districts should provide clearly stated policies and goals and provide the resources needed to implement them. One example is the need to provide students with opportunities to learn in reasonably sized classes. Another example is the need to coordinate in-class and pull-out efforts so that instruction offered in various settings is complementary. Still another example is the need for an emphasis on

88

quality instruction in the regular classroom, regardless of the support services provided for intervention.

Implementing quality classroom instruction in the regular classroom requires policies that provide for large blocks of uninterrupted time for language arts instruction with flexible grouping patterns that allow for varied types of materials, instructional tasks, and grouping structures. Small-group instruction is particularly crucial for the struggling reader, who often needs a second or third try at learning the reading strategies previously introduced to the entire class. Small similar-needs groups allow teachers to tailor instruction and maintain the attention of children who tend to be distracted easily. They offer opportunities for guided practice under the watchful eye of the teacher, who uses this time to monitor children's reading behaviors and adjust instruction accordingly. Additional opportunities for struggling readers to work in pairs and in heterogeneous small groups with children of varied abilities and interests avoids the stigma that may be associated with long-term ability grouping.

Nature of Instruction

Children requiring intervention need extra assistance to become strategic readers who think with texts. Intervention programs need to engage these students in activities involving higher level intellectual processes with expectations that are challenging for them as well as realistic. Reducing the curriculum to low-level skills that require little thinking with text minimizes the chance that the students will gain ownership and control of what they learn so that they can apply it to new situations. Students should spend most of their time actually reading rather than on useless seatwork or other activities that do not directly support learning to read. Skills should not be taught to them in a manner suggesting they can only learn by accumulating disparate pieces of information. Strickland (1998b) outlines some instructional strategies that promote thinking with text for all students: (1) the use of multilevel activities, (2) specific instruction in self-monitoring and self-assessment, (3) scaffolded instruction that makes use of modeling and demonstrations, and (4) linking reading and writing instruction. Following is an explanation of each of these strategies:

1. Multilevel activities help ensure that students who are struggling will engage in the same intellectual processes as everyone else, with expectations appropriate to their current level of performance. With multilevel tasks, the teacher gives the same task to the entire

group with the understanding that each child will respond according to his or her ability. For example, most writing assignments in response to reading are multilevel because they allow struggling students to participate in the same thought processes and communications activities as the rest of the class. The teacher analyzes the products for possible teaching points and evidence of continuing growth in every child.

2. Children experiencing difficulty need special help in monitoring their own comprehension. They must be taught to self-question: Does this make sense? Does it sound right? Does it look right? As with all learners, these children need to treat learning to read and write as problem-solving activities that they are increasingly equipped to handle on their own.
3. Scaffolded instruction that makes use of modeling and demonstrations should be a key element of reading and writing lessons. Of particular value are think-alouds, in which teachers say aloud what they are thinking as they read and write. This helps make the processes visible for struggling learners. These children need to know how skilled readers and writers do what they do.
4. Instruction in reading and writing should be linked together and taught so that they are used skillfully and strategically. Struggling learners need to be taught in ways that help them generate new knowledge and new applications. Teachers need to be explicit about how what is learned about reading can help with writing and vice versa.

Documenting and Monitoring Learning

Keeping track of how well students are doing is integral to successful interventions. Teachers who respect and respond to variability are constantly alert to individual needs, whether they indicate long-term additional support or short-term attention. Merely documenting and assessing progress is not enough, however. The instructional decisions that are based on what is learned are what really count. Assessment tools such as running records, rubrics, checklists, personal conferences, and observational notes should be used to monitor progress and plan instruction. This type of documentation more truly reveals student needs as opposed to norm-referenced standardized tests or even teacher-developed paper and pencil tests alone (Calfee & Hiebert, 1988).

Home-School Connections

A systematic program of home support, with a built-in monitoring system, should be in place. This helps to keep parents and other caregivers informed about the expectations of the school and their child's progress. Keeping them involved makes it less likely that they will be surprised about their child's progress. Home activities should emphasize independent reading and writing, be easily monitored by parent and teacher, and not be too time consuming.

Professional Development

A program of ongoing professional development that emphasizes that every staff member must share in the responsibility for struggling readers and writers can be effective in improving the instructional program for these students and promoting a mindset that acknowledges that these children are everyone's responsibility (Strickland, 1995, 1998a). Areas of focus that need to be addressed include the following:

1. *How young children learn to read and write and the implications for instruction.* Although teachers are presumed to be well acquainted with these concepts, it helps to have them discussed in a forum where wide disparities between classroom instruction and specialized programs for learners at risk can be acknowledged and addressed.
2. *Instructional strategies that support what is known about how young children develop literacy.* What teachers believe regarding how language and literacy develop will influence their decisions about good instructional practice. The focus should be on what is known about how young children learn and the developmentally appropriate practice for teaching comprehension and word recognition strategies.
3. *Merging instruction with assessment in beginning reading programs.* Classroom teachers need manageable assessment tools that focus on students' application of skills and strategies in use and provide needed information to tailor instruction to individual needs. Teachers need help in collecting and interpreting the information they get from work samples and observations.
4. *Evaluating the beginning reading program.* Professional activities that support ongoing updates and discussions of new developments in the field should take place on a regular basis. Grade-level study groups or staff meetings designated for this purpose help

facilitate the faculty's need to reflect on programmatic issues, set goals, and conduct long-range planning and self-assessment at the program level.

Needed Research

The need for effective prevention and intervention programs will probably exist for many years. As new attempts to deal with the issue are initiated and studied, more will be learned about how to make these efforts successful. Continued efforts to refine and improve on existing programs also will prove valuable. Several areas of research appear to be in need of special attention.

There is a need for literacy inventories and classroom observation tools that help teachers identify those children who are potentially at risk for failure. Tools that help differentiate between a lack of literacy experiences and low learning potential would be useful in helping teachers to make that important distinction. Assessment tools that are manageable, informative, and easy to integrate into the ongoing instructional program are needed to help reading specialists and teachers link instruction to assessment.

In recent years, many research efforts have been designed to describe the characteristics of exemplary classroom teachers and teaching. An in-depth look at what these teachers do to help the struggling students in their classrooms would provide needed information about the best ways to differentiate instruction.

Many schools are still grappling with issues related to pull-out intervention programs versus programs that involve special help within the classroom. More information on the positive and negative features of both and the circumstances that encourage or discourage positive results would be useful.

In situations in which schools adopt special programs involving highly trained personnel, there is a need to know more about how to improve articulation between the specialists and the classroom teachers and promote harmony among programs.

In schools where reading failure is chronic, a complete overhaul is often needed to effect change. Efforts to develop more whole-school literacy intervention models that include a strong research component are needed. A limited number of models have the intensive research evidence to support their claims, which leaves educators with few choices. Models that provide options to adapt to local needs would be particularly helpful.

Continued research on effective instructional strategies, content focus and sequence, and strategies that promote motivation to learn among readers and writers at risk could potentially improve the quality of instruction.

Researchers agree that ongoing professional development for teachers, supervisors, and administrators as well as training for paraprofessionals and volunteers is critical to the success of intervention programs. Creative and cost-effective methods that truly engage educators in shaping and implementing professional development is needed to make them systemic and useful as ongoing support.

Finally, ways to better involve the home in the educational process would be helpful in supporting children's cognitive and affective development.

Summary

The history of programmatic efforts designed to influence the course of young children's language and literacy development is relatively young. Nevertheless, examined collectively there is sufficient evidence to identify several factors that educators can apply to early literacy programs. Attention should be given to providing a balanced and child-appropriate curriculum, school and classroom organization that includes flexible grouping, instruction that is multilevel and makes use of modeling and demonstrations, ongoing documentation and monitoring of children's growth, and the need for strong connections between home and school.

Questions for Discussion

1. Discuss some of the factors that have caused educators to rely less heavily on remediation programs to emphasize prevention and intervention. How does this shift correspond with your personal experience as a student, teacher, or parent?
2. Select two programs listed in this chapter and arrange to observe each one. Use the factors listed in the section "Learning From Efforts at Prevention and Intervention" to assess them. Share your opinions and discuss them with others who have similar interests.
3. Share any experiences you have had with the programs described in this chapter or with similar programs. What do you see as their positive and negative features? What changes would you make?

4. Discuss the concept that "everyone is responsible for struggling readers and writers." What are the implications for classroom teachers? Resource personnel? Administrators?

5. Review the suggestions for further research. Based on your experience, what do you see as the most pressing concern? Why?

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94

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Chapter 5

What We Know About How to Teach Phonics

Patricia M. Cunningham and James W. Cunningham

Phonics is once again a hot topic, and teachers, parents, school board members, and legislators are all talking about it. Everyone seems to agree that we need to teach phonics, and almost everyone has an opinion about how it should (and should not) be taught. The question regarding how to teach phonics is not a new issue, however. In 1934, Paul McKee, one of the most prominent reading experts of his day, wrote the following:

> The question of instruction in phonics has aroused a lot of controversy. Some educators have held to the proposition that phonetic training is not only futile and wasteful but also harmful to the best interests of a reading program. Others believe that since the child must have some means of attacking strange words, instruction in phonics is imperative. There have been disputes also relative to the amount of phonics to be taught, the time when the teaching should take place, and the methods to be used. In fact, the writer knows of no problem around which more disputes have centered. (p. 191)

When McKee wrote these words, there was little knowledge on which to base decisions regarding how phonics should be taught. In the decades since, we have accumulated vast amounts of knowledge about how the brain works, how children learn, and how words are structured. In this chapter, we will first summarize some of the most important research findings about good teaching, regardless of what is being taught. Next, we will summarize the major findings specific to the teaching of phonics and how children learn to decode unfamiliar words. We will then suggest research-based activities for teaching phonics.

What We Know About How to Teach

There are some principles that apply to everything that is taught. As we consider how phonics should be taught, we must not overlook that all instruction must help learners develop cognitive clarity and become engaged with what they are learning. All instruction also must be as multifaceted and multilevel as possible.

Children Need Cognitive Clarity About What They Are Learning

Cognitive clarity is knowing what you are trying to do and understanding where you are trying to go and why you are going there. When you have cognitive clarity about a task, you are more likely to persist in your efforts because you anticipate the goals you will eventually reach. You self-monitor your actions by thinking about whether they will get you where you want to go. You are able to cooperate with the instruction you receive because you know what your teacher is trying to help you learn.

Imagine that you are making a new recipe—Tangy Thai Trout. You are a good cook, but Tangy Thai Trout requires ingredients and procedures that you have never used before. What would be your level of cognitive clarity? That would probably depend on your prior experience and level of support. If you had never eaten or seen anyone prepare Thai food, your cognitive clarity would probably be fairly low. What if you had never seen anyone cooking it, but you had eaten it in a wonderful Thai restaurant and then gotten the recipe from a friend of the chef? Anticipating how good it could taste and having an idea of the finished product would definitely increase your level of cognitive clarity. Now imagine that you are watching a television show on cooking and, serendipitously, there is a chef preparing Tangy Thai Trout. If you quickly put a tape in your VCR and capture the step-by-step demonstration, you will probably create a dish your friends and relatives will rave about.

Cognitive clarity is often taken for granted by adults, who have a clear sense of the importance of what they are trying to teach. Unfortunately, many children—particularly those who come from less academic environments—have little idea what they are trying to do or why anyone would want to do it. Experiencing the end product and watching people successfully modeling the processes necessary to achieve that end product gradually develop learners' cognitive clarity.

John Downing coined the terms *cognitive clarity* and *cognitive confusion* in his theoretical work on reading, but the terms have broad application to all learning. Downing (1979) defined cognitive clarity as "a technical label for the psychological components that lie behind what the layman might refer to as 'clear understanding,' 'clear thinking,' [or] 'grasping the problem'" (p. 5). As such, cognitive clarity would be considered a component of metacognition, and it would be supported by the research that has found that clear understanding of a task and its goals aids learning.

Children Need to Become Engaged With What They Are Learning

Engagement is probably the most common term used to talk about the relationship between motivation and learning. Engaged learners work in a motivated way—that is, they employ whatever skills and strategies they have with effort, persistence, and an expectation of success. Recent theory and research have changed the predominant view of motivation from being a drive or the result of reinforcement to being learners' beliefs about themselves (Guthrie & Wigfield, 1997). We now know that motivation has at least three major components—self-confidence, beliefs about why you succeed or fail, and seeing the activity to be learned as pleasurable.

One of the most important aspects of motivation is self-confidence (also called self-efficacy). According to Schunk and Zimmerman (1997), "Self-efficacy refers to beliefs a person has about his or her capabilities to learn or perform behaviors at designated levels" (p. 34). The research on self-confidence and learning suggests that students who have doubts about their ability to learn something are less likely to try to learn it and more likely—when they do try to learn it—to give up when they encounter difficulty. Students who have confidence in their ability to learn something put forth more effort to learn it and tend to persist even in the face of challenges.

The feeling of being capable of learning is not a constant attitude. All of us have self-confidence about learning in some areas while lacking it in others. For example, a person may have high self-confidence when learning to play a new musical instrument, but lack confidence that he or she can learn to play a new sport. Persons with self-confidence in math do not always have self-confidence in literacy. Learners must be helped to develop or maintain self-confidence in each subject being taught.

In addition to self-confidence, motivation is affected by learners' beliefs about why they have difficulty. If they believe that they are having trouble because they are not good at learning, their difficulty will undermine their self-confidence. However, "[n]egative self-evaluations will not diminish self-efficacy and motivation if students believe they are capable of succeeding but that their present approach is ineffective" (Schunk & Zimmerman, 1997, p. 40). Students must learn to self-monitor their success and learn that it is not their ability but the approach they are taking that is the cause of their success or failure.

Young children especially are dependent on their teachers and fellow students to help them acquire the insight that our strategies are different from ourselves. Only by watching teachers and peers actively applying strategies, self-monitoring success, and—if necessary—changing strategies do young children learn that success does not result from some fixed ability, but from knowledgeable and flexible efforts. Unless students learn to attribute their success or failure to their procedures rather than their unchanging competence, they will not be willing to learn different procedures or to give those procedures a chance to work.

As important as self-confidence is in learning, there are nevertheless things we have confidence we can learn that we still have no desire to learn. Children who dislike something may avoid it or give only partial attention to learning it, although they have the self-confidence to learn it. At first, we expect to have to insist that students pay attention to our lessons and attempt assigned tasks. Before long, however, if students still only pay attention during lessons or complete tasks when we insist or reward them for doing so, we know their chances of ever being good at that activity are low. Ultimately, being successful at learning anything requires that we become interested in the activity to be learned and see doing it as enjoyable.

Engagement plays an important role in learning any subject. Learners who develop self-confidence, try new strategies when they experience failure or difficulty, and come to see the activity as pleasurable are motivated learners.

Children Need Instruction That Is Multifaceted and Multilevel

Fostering cognitive clarity and promoting engagement are universal teaching principles that apply to all subjects and learners of all ages and types. A third general instructional principle acknowledges the differences in how children learn. Gardner (1993) introduced the idea of multiple intelligences and reminded us that children do not all learn in the same way. They come with their own personalities, learning strengths, and learning weaknesses. Regardless of what you call them—multiple intelligences, learning styles, personalities—or exactly how many types exist, children have them. The best instruction in any subject seeks multiple ways to accomplish the same goals so that regardless of how a child prefers to learn or learns best, an opportunity to learn in that way is available.

In addition to having different learning personalities, children vary with regard to their entry level and how many encounters it takes them to "own" a skill or concept. Instruction that takes a single skill or concept and teaches it to mastery before going on to the next concept is only effective if it is being given to one child at a time. As soon as you have two or more children, you will have different entering knowledge levels and different numbers of encounters needed for learning.

A multilevel activity is a single activity that is so rich, students at different levels may learn through the same activity. Unlike single-level activities, multilevel activities are not frustrating for those with much to learn, boring for those with little to learn, or both when aimed at those in the middle. When teachers provide daily multilevel learning opportunities, more children achieve the mastery desired over time (Cunningham, Hall, & Defee, 1998).

What We Know About How to Teach Phonics

Keeping in mind the overall learning principles explored in the previous section, we will now look specifically at how to teach phonics. There have been few instructional studies comparing different types of phonics instruction, and those that have been done have often compared systematic phonics instruction with "hit-or-miss" phonics instruction. From these studies, we can conclude that any kind of well-organized and efficient phonics instruction is generally better than little or no phonics instruction that leaves learning phonics to chance. Stahl, Duffy-Hester, and Stahl (1998) reviewed the research on phonics instruction and concluded that there are several types of good phonics instruction and that there is no research base to support the superiority of any one particular type. The National Reading Panel (2000a, 2000b) reviewed the experimental research on teaching phonics and determined that explicit and systematic phonics is superior to nonsystematic or no phonics, but that there is no significant difference in effectiveness among the kinds of systematic phonics instruction. The Panel also found no significant difference in effectiveness among tutoring, small-group instruction, or whole-class phonics instruction.

In trying to determine what type of phonics instruction is most effective, we must look at other research findings about how children learn phonics. We can then combine these findings with the three overall learning principles and make some reasonable and research-based suggestions for how best to teach phonics.

Children Need Phonemic Awareness But That's Not All They Need

One of the understandings that many children gain from early reading and writing encounters is the realization that spoken words are made up of sounds. These sounds (phonemes) are not separate and distinct; in fact, their existence is quite abstract. Phonemic awareness has many levels, and it includes the ability to decide whether spoken words rhyme, to know what spoken word you would have if you removed a sound, and to manipulate phonemes to form different spoken words. Phonemic awareness seems to be developed gradually for most children through much exposure to nursery rhymes and books that promote word play such as *Green Eggs and Ham* by Dr. Seuss, *Inside, Outside, Upside Down* by Stan and Jan Berenstain, *There's a Wocket in My Pocket* by Dr. Seuss, and *The Berenstains' B Book* by Stan and Jan Berenstain.

Phonemic awareness is one of the best predictors of success in learning to read (Bryant, Bradley, Maclean, & Crossland, 1989; International Reading Association, 1998). However, this has led some people to conclude that phonemic awareness is all we need to worry about in preparing children to read. Phonemic awareness training programs have been developed and mandated for every child, every day for 30 to 40 minutes. The classroom reality is that there are only so many minutes in a day, and if one activity gets 30 to 40 minutes, other important activities get less time. In addition to phonemic awareness, children who are going to learn to read successfully must develop print-tracking skills and begin to learn some letter names and sounds. They need to develop cognitive clarity about what reading and writing are for, which they can only learn when they spend some of their time each day in the presence of reading and writing.

Another problem with this overreaction to the phonemic awareness findings is that some children enter school with sufficient phonemic awareness to begin to learn to read, whereas others will develop it solely from engaging in emergent literacy activities such as shared reading of books that play with sounds, writing with invented spelling, and learning onsets using a variety of activities (key actions, students' names, and key foods or beverages). What are these children going to gain from 30 to 40 minutes of daily phonemic awareness training (90 to 120 hours in a school year)? Such single-level instruction can only bore and even confuse those who already have or would learn phonemic awareness without it.

Children Need to Learn Sequential Decoding But Not Necessarily Through Synthetic Phonics Instruction

Sequential decoding is the ability to look at all the letters in an unknown word and associate sounds with some of the letters. Sequential decoding is not necessarily accomplished by saying a sound for each letter and then blending those individual sounds together. Beginning readers often use what is called the "consonant plane" (Berent & Perfetti, 1995) to sequentially decode words in context. Imagine a young reader who knows as sight words *he, went, to,* and *and* looking at a picture of a boy fast asleep in bed with this sentence underneath: *He went to bed and fell fast asleep.* By looking at all the letters in the unknown words *bed, fell, fast,* and *asleep,* a beginning reader who knows the consonant sounds, is using the context and picture clues, and knows that reading has to make sense and sound like language could use the consonant plane to decode the unknown words in that sentence.

Synthetic phonics approaches begin by teaching children individual sounds for letters and then having them blend those letters together to sound out words. In synthetic phonics programs, the first text children read is constructed to have them practice their decoding and is restricted to sounds they can blend to make words, plus a few essential sight words. Here are the first two pages of an early story in a synthetic phonics text (Cassidy, Roettger, & Wixson, 1987, pp. 15–16):

> Dad ran. Ann ran. Dad and Ann ran.
>
> Dad ran. Nan ran. Dad and Nan ran.

To become fluent readers, children must learn the common sounds for vowel patterns. But, in the beginning, readers can learn to do sequential decoding using meaning and the consonant plane. As they decode more words in this way, children learn more about words and particularly about patterns in words. Children must learn to sequentially decode words, but that does not mean they need to be taught with a synthetic phonics approach.

Children Need to Apply Phonics But Do Not Need to Be Restricted to Highly Decodable Text

The two sentences in the previous section about Dad, Ann, and Nan are an example of highly decodable text. Based on the finding that children need to have opportunities to apply their phonics to decode words (Juel & Roper/Schneider, 1985), some researchers have advocated the exclusive use of highly decodable texts for beginning reading. In her summary of National Institute of Child Health and Human Development (NICHD) research, Grossen (1997) suggests that decodable text be required for beginning reading instruction. Many reading educators and psychologists have since questioned this summary (e.g., Allington & Woodside-Jiron, 1997; Hiebert, 1999). Although there is general agreement that children need text in which they have to apply their decoding to some words, there does not seem to be any support in the research for recommending highly decodable text as the exclusive beginning reading material for all children.

Hiebert (1999) makes the case for children reading text that provides practice with high-frequency words, along with opportunities to apply decoding skills and use meaning-based cues. Because she does not see these "multiple criterion" texts presently available, she suggests teachers may want to provide different kinds of texts—some more sight-word oriented, some more decoding oriented, and some more meaning-cue oriented—to children on a regular basis so that they learn to use all the word identification cues fluent readers actually use.

As Children Learn More Words, They Use Patterns and Analogy to Decode

Imagine that you are reading and encounter the words *spew* and *spate* for the first time. You would probably quickly pronounce them in your mind and then try to make sense of them in their sentence context: *A spate of people gathered when the oil began to spew out of the ground.* Good readers encounter new words in their reading all the time. If you have never seen a word before, you have to decode it—get it pronounced—in some way, whether overtly or covertly. Some researchers (Adams, 1990; Goswami, 2000; Goswami & Bryant, 1990; Moustafa, 1997) believe

104

that the way you decode many, if not most, words is to use patterns learned from other words. *Spew* has two patterns—*sp* and *ew*—often called the onset and the rime. *Spate* has the same onset—*sp*—but a different rime—*ate*.

Because you are a fluent reader, when you first encountered *spew* and *spate*, you probably automatically decoded these words using the patterns—*sp, ew, ate*—familiar to you from words such as *spill, spy, new, few, chew, ate, gate, date, hate.* If you had encountered these words earlier in your reading development when you did not have the *sp, ew, ate* patterns firmly established from many other words, you might have had to go through a slightly longer process in which you thought of some *sp, ew*, and *ate* words you knew, used these words to find the pattern, and applied these patterns to the new words. Your brain may have thought something like, "*S-p* is how words like *spill* and *spy* begin. *E-w* is in *new* and *chew. A-t-e* is in *ate* and *date.*" You use analogy to decode when your brain accesses other words you know and combines these patterns to decode new words.

Decoding by pattern and analogy uses the same units—the onset and the rime. It is difficult, if not impossible, to know which one a reader is using. In general, the more words you have read with a particular pattern, the more apt you are to have that pattern stored in your brain and thus the less likely you will go through an analogy process. When you are just beginning to learn to read, you do not have enough words to use analogies or to induce patterns. Most researchers believe that by the time children have a fluent first-grade reading level, they are using patterns and analogy as their major decoding strategy.

Gaining knowledge of rime patterns may be particularly important for learning to decode the "vowel plane" of words because of the difficulty of vowels and how vowel sounds are affected by other letters in the word, particularly the consonants that follow them (Berent & Perfetti, 1995; Goswami, 2000).

Children Decode Multisyllabic Words Using Patterns That Are Often Morphemes

What do you do when you come to large words in your reading that you have never encountered before? Imagine the first time you meet the printed words *technostress* and *desertification.* Just as with smaller words, you decode or pronounce them. You probably pronounce *technostress* quite quickly and even figure out a meaning: "I know how that feels!"

Desertification probably takes a little longer and may require a sentence context to solidify the meaning: *The desertification in Africa caused by the removal of trees and brush should be of concern to the entire world community.* Using what you know about the root word *desert* and other words that end in *ification*, such as *modification* and *unification*, along with the sentence context, you confirm your pronunciation and construct meaning for *desertification.*

Decoding large words is also accomplished by patterns and analogy. Rather than onsets and rimes, however, the patterns are often morphemes—root words, suffixes, and prefixes. English is the most morphologically connected language. Estimates are that for every word you know, you can quickly learn six or seven other words that share some of the same morphemes (Nagy & Anderson, 1984). Because morphemes provide meaning clues as well as decoding and spelling patterns, learning how to use the morphemes in large words helps you build your meaning vocabulary. Wide reading is the most significant predictor of vocabulary size, and the best guess of experts is that you use context and morphological clues together to infer meanings for new words you encounter in your reading.

Research-Based Phonics Instruction

We now come to the question that drives this chapter. How should we teach phonics, given all that we know about how children learn and particularly how children learn to decode? In this section, we will first show how research supports the value of reading, writing, and multiple activities for the teaching of phonics. We will then describe three phonics instructional activities that are consistent with the research summarized in the first two sections of this chapter.

Children Should Spend Most of Their Reading/Language Arts Time Reading and Writing

Although it is difficult to fix a specific number, the ratio of real reading and writing time to phonics instructional time we have settled on is 3 to 1. Over the past 12 years, we have developed an effective instructional framework for primary literacy instruction called The Four Blocks (Cunningham, Hall, & Defee, 1998; Cunningham, Hall, & Sigmon, 1999). Children in Four Blocks classrooms spend 30 to 40 minutes each day engaged in guided reading, 30 to 40 minutes in self-selected reading (which includes teacher read-aloud), 30 to 40 minutes in writing, and 30 to 40 minutes working with words. Three blocks, or three quarters of the language arts time each day, are allotted to real reading and writing.

It is beyond the scope of this chapter to describe in detail all the activities that occur during the guided reading, self-selected reading, and writing blocks, but these three instructional methods are critical to implementing the general learning principles discussed earlier. Because these three methods largely consist of "real" literacy activities, they help develop cognitive clarity about what reading and writing are and how they are used. As children find pleasure and success in reading and writing, their level of literacy engagement increases. There is much variety within each of these three methods, making the literacy experience a multifaceted one. Self-selected reading and writing are always on each child's reading level and thus assure that a good part of each day's instruction is multilevel. In addition, these three methods support the teaching of phonics that takes place in the working-with-words block.

Guided reading instructional time provides students with guided practice in applying the phonics skills they are taught during the working-with-words sessions. Self-selected reading and writing instructional times each provide students with both guided and independent practice in applying those phonics skills. During writing instructional time, writing with invented spelling also fosters phonemic awareness and sequential decoding.

Clarke (1988) compared the effectiveness of invented spelling versus an emphasis on correct spelling in first-grade classrooms. The children who had regularly invented spellings were superior to the others on measures of word decoding at the end of the year. Furthermore, invented spelling was particularly helpful to learning phonics for those first graders who had been designated as having low readiness at the beginning of the year.

Phonics Should Be Taught Through a Variety of Multilevel Activities That Emphasize Transfer

We now turn our attention to the time designated to helping children learn phonics. From our experiences helping teachers implement The Four Blocks, we have learned that a variety of phonics instructional activities that emphasize transfer help children at all levels learn phonics without boredom.

There are a number of activities we use to help children develop their phonics skills. Following, we will briefly describe three of these activities and then explain how they reflect our learning and phonics principles.

Making Words. Making Words (Cunningham & Cunningham, 1992; Cunningham & Hall, 1994) is a manipulative activity in which children learn how to look for patterns in words and how changing just one letter or where a letter is placed changes the whole word. Each Making Words lesson has three parts. First, children manipulate letters to make 10 to 15 words—including a "secret" word made from all the letters. Next, they sort the words into patterns. Finally, they learn how to transfer their phonics knowledge by using rhyming words they have made to decode and spell some other rhyming words.

To plan a Making Words lesson, we begin with the secret word. Here is an example for a Making Words lesson in which the secret word is *Martin.* This word was chosen to fit a theme—famous African Americans—and it allows us to make words we can then sort for the *t-r* blend and lots of rhymes. Using the letters in *Martin,* we choose 10 to 15 words that will give us some easy and harder words, some *t-r* words, and several sets of rhymes. We then decide on the order in which words will be made, beginning with short words and building to larger words. We write these words on index cards to use in the sorting and transferring parts of the lesson.

As the children make each word, we choose one child who has made it correctly to come and make it in a pocket chart. As the lesson begins, the letters *a, i, m, n, r,* and *t* are in the pocket chart. The children each have the same letters and a holder. The teacher leads them to make words by saying the following:

> Take two letters and make *am*: I *am* your teacher.
>
> Now, change just one letter and you can spell *at*: We are *at* school.
>
> Add a letter to make the three-letter word *rat.*
>
> Now change just one letter and *rat* can become *mat*: In kindergarten you slept on your *mat.* Everyone say *mat.*
>
> Change a letter again and turn your *mat* into a *man.*
>
> Now change just one letter and *man* can become *tan.*
>
> Change *tan* into *ran.*
>
> Now change one letter and change *ran* into *ram*: Our high school's mascot is a *ram.* Everyone say *ram.*
>
> Let's make one more three-letter word—*rim*: The top edge of something like a glass is called a *rim.* Everyone say *rim.*

> Now, we are going to make some four-letter words. Add one letter to *rim* and you will have *trim*. Trim is another word for decorate: At Christmas, we *trim* the tree. Stretch out the word *trim* and listen to the sounds you hear yourself saying.
>
> Change *trim* to *tram*: You can ride in a *tram*. Everyone say *tram*.
>
> Take out all your letters and start over and make another four-letter word—*main*. You can only hear three sounds in *main*, but it takes four letters to spell it. Think about what letter you can't hear and where to put it.
>
> Now change just one letter and *main* can become *rain*.
>
> Now, let's make a five-letter word. Add just one letter to *rain*, and you will have a *train*.
>
> Has anyone figured out the secret word? I will come around to see if anyone has the secret word.

Children often have trouble figuring out the secret word when it is a name—even though all their letters have a capital letter on one side. If no one has figured out the secret word, we give them a hint, such as, "It's the name of one of the African Americans we have been studying."

Several children quickly figure out their letters can spell *Martin* and a child who had spelled it correctly makes it with the pocket chart letters. Then, everyone makes *Martin* in their holders to finish the first part of the lesson.

For the sorting part of the lesson, we put the words on index cards in the pocket chart. The first sort in this lesson is for beginning sounds. The teacher tells the children to sort out all the words that do not begin with a vowel and put them together in columns with all the same letters up to the vowel. The children are used to sorting for all beginning letters and quickly arrange the pocket chart index cards so that these words are grouped together:

rat
ran
ram
rim
rain

mat
man
main
Martin

tan

trim
tram
train

The teacher and children pronounce all the words, paying special attention to the three *t-r* words. They "stretch out" *trim, tram,* and *train* and agree that you can hear both the *t* and the *r* "blended together."

Next, we help them sort the words into rhymes:

am	at	man	main	rim
ram	rat	tan	rain	trim
tram	mat	ran	train	

Once the words are sorted into rhymes, we remind the children that rhyming words can help them read and spell words. We then write two new rhyming words on cards and have them place these words under the rhyming words and use the rhymes to decode them:

swim Spain

Finally, we say two rhyming words and help them use the rhyming words to figure out how to spell them:

clan Spam

When the lesson ends, the transfer words are lined up under the rhyming words in the pocket chart:

am	at	man	main	rim
ram	rat	tan	rain	trim
tram	mat	ran	train	swim
Spam		clan	Spain	

Making Words lessons teach children many things. The children learn that you pay attention to the sounds in words and figure out the letters so that you can spell and read lots of words. They learn to pay attention to all the letters because changing just one letter results in a new word. They also learn that it matters where you put the letters. Through the transfer words, children learn that knowing phonics helps you decode and spell other words. In short, they develop cognitive clarity about words and why and how we use phonics.

Making Words lessons promote engagement because all children can be successful. We send children who have made words correctly to make them with the big letters and, because we know which children to spotlight for which words, all children experience success. Making Words lessons are also "hands-on-minds-on" activities in which there are puzzles to be solved:

> How can you change one letter and make *trim* become *tram*?
>
> What letter can you add to turn *rain* into *train*?
>
> What is the secret word that can be made with all these letters?
>
> Which rhyming words will help me spell *Spam*?

Manipulating letters and solving puzzles is fun and most children perceive Making Words as a pleasurable activity, thereby increasing their engagement with letters, sounds, and words.

Making Words lessons are multilevel in many ways. Each lesson begins with short, easy words and progresses to larger words, including the secret word. Figuring out the secret word in the limited time available is a challenge for even the most advanced readers. Making Words includes even children with very limited literacy who enjoy manipulating the letters and making the words even if they do not get the larger words completely made until these words are made with the pocket chart letters. By ending each lesson with sorting the words into patterns and then using those patterns to read and spell some new words, we help children of all levels see how you can use the patterns you see in words to read and spell other words.

Making Words lessons develop phonemic awareness when children stretch out words to hear the sounds and the order of these sounds. Sorting the words by beginning letters and then into rhyming words develops another facet of phonemic awareness. Children who listen for sounds and then select letters to represent these sounds and arrange them to make words are practicing sequential decoding. Sorting and using the rhyming patterns helps them learn rhyming patterns, and deciding which rhyming words will help them read and spell the transfer words fosters the analogy decoding strategy.

Using Words You Know. Using Words You Know (Cunningham, 2000) is an activity designed to help students learn to use the words they already know to decode and spell many other words. The activity begins with some known words and then helps children learn how these words they know help them read and spell other words. Following is an example using the known words *bike, car, van,* and *train.*

The teacher begins the lesson by dividing a chart into four columns and heading each column with *bike, car, van,* and *train.* The students set up the same columns on a piece of paper and write these four words.

The teacher reminds the students that words that rhyme often have the same spelling pattern and that the spelling pattern in a short word begins with the vowel and goes to the end of the word. The teacher and the children underline the spelling patterns *i-k-e, a-r, a-n,* and *a-i-n.*

The teacher tells the students that they will be shown some words and that they should write them under the word with the same spelling pattern. The teacher then shows them words written on index cards that have one of these patterns. Students write these words on their papers in the correct columns and the teacher chooses a student to write each word on the chart. After each word is written on the chart, students pronounce the word that heads the column and then the new word, making them rhyme.

Next, the teacher explains that thinking of rhyming words also can help you spell. Now, rather than showing the students words, the teacher says words and the students decide which word they rhyme with and use the spelling patterns to spell them. Just as in the first step, one child writes each word on the chart in the correct column. Here is the chart with the 20 words students have decoded and spelled:

bike	car	van	train
hike	jar	pan	Spain
spike	star	Fran	sprain
Mike	far	than	stain
strike	scar	clan	strain
pike	tar	bran	brain

To make the lesson more multilevel and to show all students that thinking of rhyming patterns can help them read and spell longer words, too, we end the lesson by showing them some longer words and having them use the known words to read them, and by saying some longer words and having them use the rhyming words to spell them. Here is what the chart might look like with these longer words added:

bike	car	van	train
hike	jar	pan	Spain
spike	star	Fran	sprain

Mike
strike
pike
hitchhike
motorbike

far
scar
tar
guitar
boxcar

than
clan
bran
trashcan

stain
strain
brain
maintain
complain
entertain

When doing Using Words You Know lessons, we always choose the words students will read and spell. We do not ask students for rhyming words, because, especially for the long vowels, there is often another pattern. *Jane* and *rein* also rhyme with *train*, but we only use words that both rhyme and have the same pattern. Later, when students are accustomed to reading and spelling by pattern, we do lessons that help them determine which of two or more patterns to use.

Using Words You Know develops cognitive clarity as students see how paying attention to the patterns in words helps you decode and spell many words. Students become more successful in choosing the right word and that success, plus the completed chart with lots of words, develops their confidence that the words they already know can help them learn to read and spell many other words—including longer words.

There are several things students can learn about words in a Using Words You Know lesson. All the initial letter patterns get reviewed as students blend them with patterns in rhyming words to read and spell new words. Blending the beginning letters with the pattern and determining rhyming words are important phonemic awareness components. Common rhyming patterns are learned and students practice the analogy decoding strategy by deciding which words they know will help them read and spell other words. Including some multisyllabic words makes the activity more multilevel for children who already know many words and patterns.

Reading/Writing Rhymes. Reading/Writing Rhymes (Cunningham, 2000) is an activity that gives students practice using patterns to decode and spell hundreds of words. Once all the rhyming words are generated on a chart, students write rhymes using these words and then read one another's rhymes. Because writing and reading are connected to every lesson, students learn how you use these patterns as you actually read and write. Here is an example of how one Reading/Writing Rhymes lesson might be carried out.

The teacher distributes an entire set of beginning letter cards to the children. The beginning letter deck contains 50 index letter cards, including

- single consonants: *b c d f g h j k l m n p r s t v w y z*
- digraphs (two letters, one sound): *sh ch wh th*
- other two-letter, one-sound combinations: *ph wr kn qu*
- blends (beginning letters blended together, sometimes called clusters): *bl br cl cr dr fl fr gl gr pl pr sc scr sk sl sm sn sp spr st str sw tr*

Once all the cards are distributed, the teacher writes a spelling pattern eight times on a piece of chart paper. Next, the teacher invites children who have cards that they think make a word to come up and place their card next to one of the written spelling patterns and pronounce the resulting word. If the word is indeed a real word, we use the word in a sentence and write that word on the chart. If the word is not a real word, we explain why we cannot write it on the chart. (If a word is a real word and does rhyme but has a different spelling pattern, such as *planned* to rhyme with *and*, we explain that it rhymes but has a different pattern and include the correct spelling on the bottom of the chart with an asterisk next to it.) We write names with capital letters and if a word can be a name and not a name, such as *Jack* and *jack*, we write it both ways. When all the children who think they can spell words with their beginning letters and the spelling pattern have come up, we call up children to make the words not yet there by saying something like, "I think the person with the *wh* card could come up here and add *wh* to *ack* to make a word we know."

We try to include all the words that any of the children would have in his or her listening vocabulary, but we avoid obscure words. If the eight patterns we wrote to begin our chart get made into complete words, we add as many more as needed. Finally, if we can think of some good longer words that rhyme and have that spelling pattern, we add them. Of course, because the children do not have all the letters to spell these longer words, the teacher just writes these on the list. Here is what the *ack* chart might look like:

ack

back
jack
Mack
pack
snack
shack
backpack
fullback

Jack
quack
track
sack
black
crack
knack
stack
tack
rack
Zack
whack
attack
hijack
racetrack

Once the chart of rhyming words is written, we work together in a shared writing format to write a silly sentence using lots of the rhyming words. Then, the children write a rhyme of their own. Many teachers put the children in small groups or have them work with partners to write these rhymes and then let different children read their rhymes to the class.

To make Reading/Writing Rhymes charts for the patterns with two common spellings, we write both patterns on the same chart. Students come up and tell us the word their beginning letters will make and we write it with the correct pattern. In many cases, there are two homophones, words that are spelled differently and have different meanings but the same pronunciation. We write both of these and talk about what each one means. Here is the chart for the *ail/ale* long vowel spelling pattern:

ail
bail
fail
frail
Gail
hail
jail
mail
nail
pail
quail
rail
sail
snail
tail
trail
wail
detail
monorail
toenail
cottontail

ale
Dale
gale
male
pale
sale
scale
stale
tale
whale
Yale
female
tattletale

Cognitive clarity is developed as children combine patterns to create words and see how phonics helps them read and spell words. Using these words to write and read silly sentences is a direct application of phonics knowledge. Because the children are actively engaged in combining their beginning letters to create words and figuring out which beginning letters will make words, children find the activity pleasurable. They also enjoy writing and reading the silly sentences that result from trying to use as many rhyming words as possible.

Reading/Writing Rhymes is a multilevel activity. All beginning letters, including the common single consonants and the less common, more complex digraphs and blends, are reviewed each time the teacher distributes the beginning letter cards. Phonemic awareness is developed as children say all the rhyming words and blend the vowel pattern with the beginning letters. Children whose word awareness is more sophisticated learn that there are often two spellings for the long vowel patterns and develop their visual checking sense as they see the rhyming words with the different patterns written on the same chart. The addition of some longer rhyming words helps them learn how to decode and spell longer words and allows them to write more interesting rhymes.

Conclusion

How we should teach phonics is not a simple question. The most effective phonics instruction must reflect what we know about teaching and learning as well as what we know about how children decode and spell words. Debate about how to teach phonics can help us provide better instruction for all children, but only if the debaters consider all that is known and avoid simplistic solutions.

There are general instructional principles that apply to everything we teach. All instruction, including phonics instruction, must help learners develop cognitive clarity and become engaged with what they are learning. All instruction, including phonics instruction, must also be as multifaceted and multilevel as possible. Guided reading, self-selected reading, and writing instruction are the methods and components of a complete reading program that best follow these general principles of teaching. Furthermore, we believe that phonics instruction must not take more than one fourth of reading/language arts time or many children's literacy learning ultimately will suffer.

There have been few instructional studies comparing different types of phonics instruction, and those that have been done have usually compared one kind of systematic phonics instruction with hit-or-miss phonics instruction. In trying to determine what type of phonics instruction is most effective, we must look at research findings about how children learn phonics.

Research indicates that children need to develop phonemic awareness and sequential decoding and have regular opportunities to apply their phonics skills. The research, however, does not support a narrow reliance on isolated phonemic awareness and synthetic phonics instruction with highly decodable text as the only or even the best way to teach phonics, let alone reading.

Research also supports teaching children orthographic patterns and analogy decoding, as well as morpheme patterns common in multisyllabic words. Children also learn phonics better when a variety of activities that emphasize transfer are used.

In this chapter, we have presented three such activities—Making Words, Using Words You Know, and Reading/Writing Rhymes—that we have found to be successful in teaching phonics during the one fourth of reading/language arts time we devote to such activities.

Questions for Discussion

1. Examine the National Reading Panel report (2000a, 2000b) or a summary of its findings relative to teaching phonemic awareness and phonics. How did the Panel deal with issues of how children learn in general, or did it? How did it deal with issues of learning to decode by patterns and analogy? What do you think of the Panel's approach to determining what the research base is for decoding instruction versus the approach we took in this chapter?
2. Examine the National Research Council report titled *Preventing Reading Difficulties in Young Children* (Snow, Burns, & Griffin, 1998) or a summary of its findings relative to teaching phonemic awareness and phonics. How did the authors deal with issues of how children learn in general, or did they? How did they deal with issues of learning to decode by patterns and analogy? What do you think of their approach to determining what the research base is for decoding instruction versus the approach we took in this chapter?
3. A number of commercial phonics instructional programs are available. Considering the ones you know or can access, determine what research base(s) they seem to have. Do they consider research on both learning phonics and how children learn in general? If you have access to such programs from 25 or more years ago, compare the newer with the older programs to determine the impact, if any, of the research on learning and phonics published in the last two decades or so.
4. Consider how reading is usually assessed in the schools in your area. Because assessment always plays a major role in how we teach, consider to what extent there is a match among the reading assessments used, the phonics instruction provided, and how children learn.

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Chapter 6

The Role of Phonemic Awareness in Learning to Read

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When educators discuss the contents of effective programs to teach beginning reading, phonemic awareness (abbreviated PA) receives substantial attention, and for good reason. Research has shown that PA is one of the leading school-entry predictors of how well children will learn to read in kindergarten and first grade (Share, Jorm, Maclean, & Matthews, 1984), and researchers conducting controlled experiments have shown that teaching PA significantly improves beginners' success in learning to read (Bus & van IJzendoorn, 1999; Ehri, Nunes, Willows, Schuster, Yaghoub-Zadeh, & Shanahan, 2001; National Reading Panel, 2000). The purpose of this chapter is to help teachers understand what PA teaching involves and what the evidence shows.

What Is Phonemic Awareness?

Phonemic awareness is a term that is often misunderstood. Some teachers believe PA is the same as letter-sound knowledge or phonics instruction. Although these concepts are related, they are not the same. Phonemes are the smallest units that make up spoken language. English consists of approximately 41 to 44 phonemes, depending on the dialect. Phonemes combine to form words. A few words have only one phoneme, such as *a* or *oh*. Most words consist of a blend of phonemes, such as *go* with two phonemes, *stop* with four phonemes, or *check* with three phonemes. Throughout this chapter, individual phonemes are represented with International Phonetic Alphabet (IPA) symbols. The Appendix on page 139 includes a complete list of phonemes in Standard American English and their IPA symbols.

Phonemes are different from the letters that are used as written units symbolizing phonemes in the spellings of words (Venezky, 1970, 1999). Letters that perform this function are called graphemes. Graphemes may

120

consist of one letter, for example, *P, T, K, A, N*, or multiple letters, such as *CH, SH, TH, -CK, EA, -IGH*, each symbolizing one phoneme.

Graphemes and phonemes combine to form words. In the examples that follow, the top row shows pronunciations divided into phonemes, with each represented by its IPA symbol between slashes. The bottom row shows spellings with capital letters depicting graphemes. Spaces separate adjacent graphemes and phonemes. Lines depict the connections linking graphemes to phonemes:

```
/g/ - /o/      /s/ /t/ /a/ /p/      /č/ /ɛ/ /k/
  \    /         \   \   |   |        \   \   \
  G   O          S   T   O   P        CH   E   CK
```

If you find it difficult to distinguish the separate phonemes in words, this is because there are no boundaries in speech marking where one phoneme ends and the next begins. Rather, phonemes are folded into each other and coarticulated to produce seamless speech.

One helpful way to identify separate phonemes is to monitor the changes that occur in your mouth as you pronounce words. For example, there are three phonemes in *pot* and these are reflected in three successive gestures: your lips closing for */p/*, your lips opening for the vowel, and then your tongue tapping the roof of your mouth for */t/*. Acoustic cues that you hear also are useful for distinguishing some phonemes in words, such as the hissing of */s/* or the buzzing of */z/*.

Another reason people may have difficulty discerning the phonemes in words is that phonemes often do not correspond to the number of letters in a word's spelling. When asked to count phonemes in words, people sometimes count letters, probably because these are easier to distinguish as separate units (Tunmer & Nesdale, 1982).

Phonemic awareness refers to the ability to focus on and manipulate phonemes in spoken words. Various tasks have been used to examine people's ability to do this:

1. Phoneme isolation, which requires recognizing individual sounds in words, for example, "Tell me the first sound in *paste*." (*/p/*)
2. Phoneme identity, which requires recognizing the common sound in different words, for example, "Tell me the sound that is the same in *bike, boy*, and *bell*." (*/b/*)
3. Phoneme categorization, which requires recognizing the word with the odd sound in a sequence of three or four words, for example, "Which word does not belong? *Bus, bun*, or *rug*." (*rug*)

4. Phoneme blending, which requires listening to a sequence of separately spoken sounds and combining them to form a recognizable word, for example, "What word is */s/ /k/ /u/ /l/*?" (*school*)
5. Phoneme segmentation, which requires breaking a word into its sounds by tapping out or counting the sounds, or by pronouncing and positioning a marker for each sound, for example, "How many phonemes in *ship*?" (three: */š/ /I/ /p/*)
6. Phoneme deletion, which requires stating the word that remains when a specified phoneme is removed, for example, "What is *smile* without the */s/*?" (*mile*)

The difficulty of some of these tasks depends on the properties of the words and phonemes to be manipulated (Stahl & Murray, 1994). Initial sounds are easier to manipulate than noninitial sounds in words. In a segmentation task, the easiest words to divide are two-phoneme words beginning with a vowel, for example, *age* and *eat*. These are easier than two-phoneme words beginning with a consonant, such as *tea* and *go* (Uhry & Ehri, 1999). Words with two phonemes are easier to segment than words with three or more phonemes. Initial and final phonemes are easier to segment than phonemes in the middle of words. Consonant-vowel blends (e.g., */b-o/* in *boat*) are easier to segment than consonant clusters (e.g., */s-t/* in *stop*, */m-p/* in *jump*).

In a blending task, stop consonants are considered more difficult to combine than continuant consonants. If you pronounce the sounds of the following graphemes,

p, b, t, d, k, g, ch, j
m, n, f, v, s, z, th, sh, l, r

you will find that the phonemes in the first row, all stop consonants, are difficult to pronounce without adding the vowel *uh*. In contrast, phonemes in the second row of consonants, called continuants, can be pronounced without an *uh* and can be held in speech (e.g., *ssssssssss*) without altering or terminating the sound. This property is believed to make continuants easier to blend. For example, the three continuant sounds */m/ /ae/ /n/* combine smoothly to form *man*. In contrast, when stops are blended, the process is not smooth. Sounds pronounced in isolation must be dropped when the blend is formed. For example, *tuh /ae/ puh* must be blended to form *tap*, not *tuhapuh*. When selecting words to teach phonemic awareness, curriculum designers begin with the easiest words and phonemes.

How Phonemic Awareness Is Distinct From Similar Concepts

It is important to recognize how PA differs from similarly labeled concepts. Whereas PA is a specific skill that involves manipulating sounds in speech, *phonics* is a method of teaching reading. Phonics programs may or may not include explicit instruction in PA. Typically, phonics programs teach students how to use grapheme-phoneme correspondences to decode or spell words.

Phonemic awareness is also different from *phoneme discrimination*, which refers to the ability to recognize whether two spoken words are the same or different, for example, recognizing that *tan* sounds different from *Dan.* Phoneme discrimination is simpler than PA, because it requires neither conscious awareness of phonemes nor phoneme manipulation.

Furthermore, PA is different from *phonological awareness*, which is a more encompassing term. Phonological awareness refers to various types of awareness, not only PA, but also awareness of larger spoken units such as syllables, onsets, and rimes. To assess phonological awareness, students might be asked to generate words that rhyme, or to segment polysyllabic words into syllables. They might be asked to delete syllables from words (e.g., What is *cowboy* without *cow*?), or they might be asked to segment one-syllable words into their onsets and rimes. Onsets consist of the single or multiple consonants that precede the vowel, and rimes consist of the vowel and following consonants, for example, *j-ump, st-op,* and *str-ong.* Dividing single-syllable words into these units is easier than dividing the words in other places, for example, after the vowel (Treiman, 1985). Generally, tasks that require students to manipulate spoken units larger than phonemes are simpler for beginners than tasks requiring phoneme manipulation (Liberman, Shankweiler, Fischer, & Carter, 1974). Often, programs that teach PA begin by teaching children to analyze larger units in words before progressing to the phonemic level.

The term *phoneme* is used by linguists to refer to the smallest unit in speech that signals a difference in meaning to a listener who knows the language. In contrast, the term *phone* refers to a linguistic sound with specified acoustic and articulatory properties. To distinguish among phonemes, a speaker uses categories that were set up in the mind when he or she acquired a particular language, whereas to distinguish among phones, one identifies physical properties of speech. Phonemes are broader categories that may include several phones. Although phones within a phonemic category differ in their articulatory features, the speaker/listener perceives them as the same phoneme. For example, the initial sounds in *chop* and *shop* are articulated differently, so they are two different phones. To an English speaker, they are also different phonemes, because substituting one for the other signals a different word. However, to a speaker of Spanish, the two different phones are processed as the same phoneme. The change in articulation does not signal a different word in Spanish. The speaker either fails to notice the difference or perceives it as a slightly different way of pronouncing the same word. Another example is when Chinese and Japanese speakers process /*l*/ and /*r*/ as the same phoneme in English words (e.g., *lice* as opposed to *rice*).

The distinction between phonemes and phones is important. If teachers have students who are learning English as a second language, they need to realize that their students are likely to misperceive some English phonemes, because the students' linguistic minds are programmed to categorize phonemes in their first language, and this system may conflict with the phoneme categorization system in English. Their confusion will be apparent when they segment English words into phonemes and write letters representing the phonemes. If their first language was Spanish, they may select *SH* when they should use *CH*. If their first language was Japanese or Chinese, they may select *L* when they should write *R*.

The Importance of Phonemic Awareness in Learning to Read

Phonemic awareness measured at the beginning of kindergarten is one of the two best predictors of how well children will learn to read during their first 2 years of school. In a longitudinal study by Share et al. (1984), kindergartners were assessed on many measures when they entered school, including phonemic segmentation, letter-name knowledge, memory for sentences, vocabulary, father's occupational status, parental reports of reading to children, television watching, and others. These researchers examined which measure best predicted how well the children were reading 1 and 2 years later. Results showed that PA was the top predictor, along with letter knowledge. Phonemic awareness correlated 0.66 with reading achievement scores in kindergarten and 0.62 with scores in first grade.

Why is PA so important in learning to read? It has to do with the structure of the English writing system and how beginners use this system when they learn to read and write words. English script is an alphabetic system. Spelling regularities exist at the level of words and at the level of phonemes. Words have prescribed spellings, and these spellings are systematic because they consist of graphemes that symbolize phonemes. Phonemic awareness skills help children learn to read words in various ways (Ehri, 1991). To decode new words, beginners must know how to blend phonemes. To remember how to read individual words, beginners must be able to segment words into the phonemes that match up to graphemes so that they can compute connections between graphemes and phonemes and store them in memory (Ehri, 1992, 1999). Phonemic segmentation skill is essential for constructing probable spellings as well as remembering correct spellings of words (Griffith, 1991). In fact, all the processes involved in learning to read and write words require PA (Ehri, 1994).

Phonemic awareness is also a potent predictor of future reading skill because it is not easy for beginners to acquire. As indicated previously, there are no breaks in speech signaling where one phoneme ends and the next one begins. Therefore, discovering these units is not a straightforward process, so many students require explicit instruction to learn how the system works. This is underscored by research showing that people who have not learned to read and write have difficulty performing PA tasks (Morais, Bertelson, Cary, & Alegria, 1987). Likewise, people who have learned to read in a script that is not graphophonemic, such as Chinese, have difficulty segmenting speech into phonemes (Mann, 1987; Read, Zhang, Nie, & Ding, 1987).

Studies on the Teaching of Phonemic Awareness

Many studies have reported strong relationships between PA and learning to read. In correlational studies, researchers measure children's ability to manipulate phonemes as well as their reading ability. Typical findings show that students who have superior PA are better readers than students with low PA. However, such findings are insufficient to show that PA was the underlying cause enabling some students to read better than others, because the finding does not rule out other causal explanations for the relationship (Ehri, 1979). The correlation may have been observed because cause operated in the reverse direction; that is, learning to read improved students' PA, or perhaps a third factor operated as an underlying cause boosting both PA and reading, for example, vocabulary size, memory, or general intelligence. To show that PA is a direct cause in helping children learn to read, we need evidence from experimental studies with treatment and control groups.

A well-designed experiment would include the following steps:

1. Pretesting students before they receive any instruction. Pretests help in selecting participants who can profit from instruction because they have weak PA. Also, pretests assessing PA verify that treatment and control groups do not differ before instruction. Comparing pretest to posttest performance on PA and reading measures reveals whether gains have resulted from the instruction.
2. Randomly assigning students to experimental and control groups. The experimental group receives instruction in PA. A treated control group receives another type of instruction involving equal time but no PA instruction. An untreated control group receives no special instruction beyond that provided in the children's classrooms at school. By randomly assigning students to these groups, the likelihood is increased that the groups do not differ systematically in any way that would explain outcome differences following instruction. This step helps to establish that the treatment, rather than some other factor, was the cause of superior gains in outcomes by the experimental group.
3. Posttesting students following instruction. Phonemic awareness posttests show whether PA-trained groups made greater gains than control groups, indicating that instruction was effective. Reading posttests reveal whether PA instruction improved students' reading abilities.
4. Monitoring students' literacy skills during subsequent years as they receive regular instruction at school but no further specialized PA instruction. This step indicates whether the contribution of PA instruction to reading lasts beyond the end of training and for how long.

Several PA instruction studies with treatment and control groups have been conducted. In describing a sample of these studies, we will pay special attention to the kind of PA instruction students received.

Phonemic Awareness Taught to Preschoolers and Kindergartners

Most children in preschool or beginning kindergarten have not yet learned to read. They may know some letter names and sounds, but their PA is weak. They cannot decode words, although they may have memorized how to read a few words by sight. The purpose of PA instruction with prereaders is to move them closer to reading.

Lundberg, Frost, and Petersen (1988) examined the effectiveness of an 8-month kindergarten program, referred to as the Lundberg program. Classroom teachers in Denmark taught children to attend to and manipulate sounds in speech through games and exercises. The sound manipulations increased in difficulty as the year progressed. The program began with easy listening activities followed by rhyming exercises. Then, the children learned to segment sentences into words and to focus on the length of words in speech. Following this, words were analyzed into syllables. For example, children listened to a troll that spoke peculiarly, syllable by syllable, and they figured out what he said. Then, phoneme analysis was introduced by having children detect phonemes in initial positions of words, mainly continuants and vowels. The teacher helped the children by stretching or repeating the initial sound, for example, "*Mmmmark*," or "*T-T-T-Tom*." The children also practiced adding and deleting phonemes from words. In the fifth month of the program, phoneme segmentation and blending were introduced, first with *VC* and *CV* words, and then followed by more complex words. The study included a control group that received the regular kindergarten program, which included no instruction in PA. Neither kindergarten program taught about letters or how to read.

The short-term effectiveness of the program was evaluated at the end of kindergarten when PA instruction ended. Children trained in PA were found to segment, blend, and delete phonemes more accurately than the children in the control group, verifying that the PA instruction was effective. The long-term effects of instruction also were assessed. In the seventh month of first grade, PA-trained children were able to spell more words than control children, but the two groups did not differ in how many words they could read. However, in the seventh month of second grade, the PA-trained group outperformed the control group on both reading and spelling tasks. These findings show that teaching PA to young children before they begin formal reading instruction boosts their success in learning to read and spell during the next 2 years in school.

Other researchers have replicated the Lundberg et al. (1988) findings in different languages: Korkman and Peltomaa (1993) in Finnish; Kozminsky and Kozminsky (1995) in Hebrew; and Schneider, Kuspert, Roth, Vise, and Marx (1997) in German. In the Schneider et al. experiment, 22 kindergarten teachers implemented the Lundberg program in their classrooms. However, only nine taught the program consistently and correctly to the end. When PA-trained groups and control groups were compared the following year (grade 1), only students of those nine teachers performed better in reading and spelling than control students. These results underscore the importance of teachers' adhering to a program for it to be effective.

In Schneider et al.'s (1997) second PA instruction study, adjustments were made to better fit the teachers' schedules, more exercises were added at the phonemic level, and implementation of the program was better supervised. At the end of instruction, PA-taught students identified, segmented, and blended phonemes better than controls. They also outperformed control students in reading and spelling tests at the end of grades 1 and 2. This provides further evidence of the short- and long-term benefits of Lundberg's program.

Whereas a variety of PA skills were taught in the Lundberg program, Byrne and Fielding-Barnsley (1991) designed a preschool program called Sound Foundations that focused on one type of phoneme manipulation, phoneme identity. Grapheme-phoneme instruction also was included. In this program, children were taught to recognize instances of the same sound in both initial and final positions across different words. Nine continuant consonants and vowels received primary attention. Children were shown several large posters covered with pictures of objects. They were instructed to pick out from a larger set the objects having targeted beginning or ending sounds, for example, *sea, seal, sailor,* and *sand.* Children also selected from an array of pictures on worksheets or cards those depicting targeted sounds. In each session, one phoneme in one position was taught. The letter representing the phoneme was introduced as well.

In this study, preschoolers averaging 4.5 years in age received either the PA instruction described or control instruction that focused on story listening and semantic activities with the same posters and worksheets. Children were trained in groups of 4 to 6 and received one 30-minute lesson per week for 12 weeks. At the end of instruction, children in the PA-trained group were able to identify substantially more initial and final phonemes in words than control students. They demonstrated superior skill identifying not only sounds they had practiced, but also unpracticed sounds, indicating that phoneme identity skill transfered to untaught phonemes. These researchers also gave students a simplified word-reading task in which children were shown a word and asked to identify it from two spoken choices (e.g., "Does this [*sat*] say *sat* or *mat*?"). Trained students read more words than control students, indicating that PA instruction improved preschoolers' word recognition skill.

These researchers investigated the long-term impact of their PA program as well (Byrne & Fielding-Barnsley, 1993, 1995). Children were tested during the next 3 years in school. At the end of kindergarten, trained children were only slightly superior to control children in PA, indicating that learning to read had narrowed the gap in PA between the two groups. At the end of each successive grade, the PA group was able to read more novel words than the control group (i.e., artificial words such as *ap*, *sut*, and *besk*), indicating that PA instruction improved children's decoding skills. At the end of second grade, there was a marginal difference in reading comprehension favoring the PA-trained students. However, the groups did not differ in reading real words or in spelling words on any of the long-term tests. One possible reason why long-term effects were not stronger in this study may be that formal reading and spelling instruction was sufficiently effective to make up for the early advantage provided by instruction in PA.

Alternative Methods for Teaching Phonemic Awareness

The effectiveness of different ways of teaching PA has been investigated. O'Connor, Jenkins, and Slocum (1995) studied whether PA instruction has to be broad rather than focused to be most effective. They selected at-risk kindergartners with low PA and randomly assigned them to one of three instructional conditions. In the comprehensive treatment, children performed a variety of sound manipulation activities that included isolating, segmenting, blending, and deleting phonemes; segmenting and blending syllables and onset-rime units; and working with rhyming words. In the focused treatment, children were taught to segment and blend onsets, rimes, and phonemes only. Instruction extended over 10 weeks, consisting of two 15-minute sessions per week for a total of 5 hours of instruction. Beginning the fifth week, letter-sound associations were taught for the sounds being practiced orally in both groups. However, children were not taught how to use letters to manipulate phonemes in the PA activities. (Note that lack of letter manipulation instruction in this study was done for theoretical reasons. As will be shown later, teaching children to manipulate phonemes using letters improves the effectiveness of PA instruction.) The third treatment, a control condition, received only the letter-sound instruction.

Comparison of PA following instruction showed that the treated groups performed equally well and both outperformed the control group, indicating that both types of instruction were equally effective in teaching PA. To measure transfer to reading, a simplified word-learning task was devised. After children learned to associate four letters and sounds, they were given practice learning to read five words comprised of the letters and sounds: *am*, *at*, *mat*, *sat*, and *sam*. Each word was taught by saying, "This is *aaaaat*, *at*." The results showed that only the focused group learned to read the words in fewer trials than the control group. This suggests that concentrating instructional time on segmenting and blending may contribute more to beginning-level reading skill than dividing attention among many PA activities.

Several studies (Davidson & Jenkins, 1994; Fox & Routh, 1984; Torgesen, Morgan, & Davis, 1992) have compared the contributions of segmentation and blending instruction to reading acquisition. Davidson and Jenkins gave kindergartners with low PA one of four types of instruction. In the segmentation treatment, each word was pronounced and the children were taught to say its separate sounds. In the blending treatment, the children listened to the separate sounds and learned to blend them into words. In the segmentation and blending treatment, the children learned first to segment, and then to blend the words. In the control condition, the children listened to stories. Children in each group were taught to a criterion of mastery. The words and nonwords analyzed during instruction were 10 two-phoneme words formed out of continuant consonants and long vowels (e.g., *my*, *vo*, *low*, *way*). At the end of instruction, all students were taught eight letters for the sounds that the treatment groups had practiced. Then, two literacy tests were given in which children practiced and received feedback in learning to read and learning to spell two-phoneme words. These words were formed from the same letter sounds, but they had not been taught during instruction.

Results showed that the groups learned the PA skill that they were taught but performed poorly on the untaught skill. This indicates that teaching students either segmentation or blending does not improve their performance in the other skill. On the measures of reading and spelling, both the segmentation and combination groups performed similarly and outperformed the control group. However, the blending group did not exceed the control group. This indicates that teaching beginners to segment is as effective for learning to read words as teaching beginners to segment and blend. In contrast, teaching beginners only to blend is not effective. Torgesen et al. (1992) replicated these findings in a similar study.

Although blending made a poor showing in these studies, Reitsma and Wesseling (1998) reported more success in a study with kindergartners in The Netherlands. They used a computer to teach kindergartners how to blend three-phoneme Dutch words (e.g., *lief*, *geit*, *met*). No limits were placed on the variety of phonemes in the words. All phoneme manipulations were conducted in speech without any letters. First, children were taught a set of vocabulary words, and these were used in various blending exercises. In one exercise, children listened to a sequence of segmented sounds and then clicked on the picture corresponding to that word. In a second exercise, children listened to two successively segmented words and clicked "same" or "different." In another exercise, children listened to words, either pronounced as wholes or segmented, and then had to find which of several boxes on the screen contained the other form of the word. If a whole word was heard, they had to find its segmented form. If a segmented word was heard, they had to find its whole form. In all these exercises, the incorrect word choices differed by several phonemes from the correct choice for some items but only by one phoneme for other items, making processing in the latter case more difficult. In the control group, children completed vocabulary exercises on the computer.

At the end of kindergarten, PA posttests of children's ability to blend and to segment words revealed superior blending performance by the trained group compared with the control group, but no difference in segmentation performance. Thus, the effects of instruction were limited to blending, which was the skill targeted by instruction. Blending instruction did not facilitate segmentation skill even though some of the exercises involved analyzing segments in words.

The following year, in first grade, children's ability to read words was examined. Long-term effects of the blending exercises were evident. Trained children read more words than control children, indicating that extensive instruction to develop blending skill does benefit reading acquisition. Blending is believed to contribute to reading by enabling children to decode new words they have not yet learned to read. However, no effects on spelling were detected, perhaps because phonemic segmentation is central to spelling and this PA skill was not enhanced by the instruction.

Researchers have focused on segmentation and blending in their programs because these are the forms of PA that relate most closely to reading and spelling processes. Williams (1980) created a PA instruction program that not only taught students to segment and blend in speech, but also incorporated letters into these processes. Referred to as the ABDs program, she tested its effectiveness with classes of learning disabled (LD) students, aged 7–12 years, and their teachers.

Williams's (1980) program began by teaching children to segment spoken words into syllables and to represent them with wooden squares. Then, two-phoneme words were segmented with squares, followed by three-phoneme words. Words were formed from seven consonants (*B /b/, M /m/, P /p/, S /s/, C /k/, G /g/,* and *T /t/*) and two vowels (short *a /ae/* and short *o /a/*). Children then learned to blend phonemes to form the same words. Letter-sound correspondences were taught next for the nine phonemes. Then, children used wooden squares now printed with letters to learn to decode, that is, to sound out and blend two- and three-phoneme words. In addition, they learned to spell, that is, to segment words into phonemes and select letters for each. All possible combinations of the seven consonants and two vowels were practiced. Then, six additional letter-sound correspondences were taught and used to decode words (*F /f/, H /h/, L /l/, N /n/, R /r/,* and short *i /I/*). Words with four and five phonemes including consonant clusters then were decoded. Finally, two-syllable words were decoded. Thus, children were taught all the basic processes needed to read and spell novel words.

Children received instruction in small groups. Each unit of the program began with an interest-arousing story read by the teacher portraying characters who demonstrated the skills to be mastered in that unit. The program was highly structured with scripts for teachers to follow. After children decoded or blended words, they listened to or read their meanings in sentences. Words with no meanings were identified as nonsense words. Worksheets were developed and games such as Go Fish and Concentration were adapted to give children further practice acquiring the skills.

The program was evaluated with two different samples of LD children, each sample compared to a control group of LD children with comparable skills at the beginning of instruction. The control groups received no special instruction. Although classroom teachers were expected to teach the entire 12-unit program, they completed only part of it, 8 units on average over a 26-week period in one sample, and 6 units on average over a 19-week period in the other sample. Results showed that at the end of instruction, PA-trained students decoded more words than control students. However, 6 months later, trained students performed only marginally better on a decoding test than untrained children. These findings indicate that LD children can benefit from PA instruction that covers both blending and segmentation and incorporates letters into learning.

The lack of strong long-term gains from the program was disappointing. This may be explained by several factors. First, students were not taught the whole program. Also, during the 6 months following instruction, trained children showed no further improvement in their decoding skills or PA skills. Conversations with two teachers who continued to have these children in their classes after the program ended suggested a possible explanation for this (Williams, 1979). The teachers said that because the children had improved so much in decoding, they were no longer spending as much time with these children on these skills. This may have halted the children's growth. In addition, it may be particularly difficult to remediate the reading problems of LD children. These children may require more extensive, long-term remediation that gives special help not just with PA and decoding, but also with other reading processes such as building a sight vocabulary, developing fluency, and acquiring comprehension strategies.

Benefit of Letters in Teaching Phonemic Awareness

As was evident in the studies already described, programs to teach PA have differed in whether letters were incorporated into instruction. Moreover, the role that letters played in phoneme manipulation differed. In some studies, children were taught to manipulate letters as they identified phonemes in words, for example, segmenting *cat* into its phonemes by saying each phoneme and selecting its letter from a set of letter tiles. In other studies, letters were simply exposed after the phonemes were identified, for example, segmenting *cat* by saying each phoneme and then lifting a window to view the letter for that sound. Effects of instruction on reading were detected in studies in which children manipulated letters (Ball & Blachman, 1991; Bradley & Bryant, 1983, 1985; Ehri & Wilce, 1987; Tangel & Blachman, 1992), but not in studies in which they were exposed passively to letters (Kerstholt, van Bon, & Schreuder, 1994, 1997).

Bradley and Bryant (1983, 1985) conducted the first experiment to provide evidence for a causal connection between PA instruction with letters and reading acquisition. They selected 5- to 7-year-old children with low PA and gave them instruction over a 2-year period. Children in the PA condition were taught to categorize words on the basis of common sounds, initial sounds first, then final sounds, then middle sounds. Children in the PA-plus-letters condition received the same sound categorization instruction. However, during the second half of instruction, plastic letters were added. Children were taught to generate spellings for a succession of similarly pronounced words, for example, spelling *cat* and then *hat* by replacing the *C* with *H*. Children in the control group clustered words by conceptual categories, such as animals. Results at the end of instruction showed that only the PA-plus-letters group statistically outperformed a control group on standardized reading and spelling tasks, not the PA group. In this study, PA instruction required the assistance of letters to facilitate learning to read.

To teach PA with letters, Blachman and her colleagues (Ball & Blachman, 1991; Blachman, Ball, Black, & Tangel, 1994; Tangel & Blachman, 1992) developed the "say-it-and- move-it" activity. Children were taught to move a blank tile from the top half to the bottom half of a card as they pronounced each phoneme in a word. The words progressed from single phonemes to two and three phonemes. After children practiced segmenting words with blank tiles, they were taught letter-sound associations and practiced moving letters as they pronounced phonemes to segment the words. Findings of the Blachman studies showed that kindergartners receiving say-it-and-move-it instruction outperformed control children on word reading and spelling tasks, indicating the value of this letter-added form of PA instruction.

Whereas some studies show that PA instruction facilitates learning to read and spell, other studies show that learning to read and spell enhances children's PA skills. It is important to recognize that the relationship between acquiring PA and acquiring literacy is interactive and reciprocal. Having some PA helps children grasp the alphabetic system and apply it to read and spell words. However, beginners commonly have trouble detecting phonemes that are buried in spoken words such as medial sounds and consonant clusters. If beginners know letter-sound correspondences, then seeing spellings of words can call attention to the presence of hard-to-detect sounds in speech, just as learning how an unfamiliar name is spelled often clarifies sounds that escaped notice when the name was spoken. In this way, print and PA function reciprocally to enhance each other's acquisition (Ehri, 1984; Ehri & Wilce, 1980, 1986).

Enriching Beginning Reading Instruction With Phonemic Awareness

In many PA experiments, the instructional context is not considered. However, there are some exceptions. Iversen and Tunmer (1993) incorporated PA into Clay's (1985) Reading Recovery (RR) program to examine whether systematic instruction in PA would make the program more effective. First-grade, at-risk readers were assigned to one of three groups: a group receiving standard RR instruction, a group receiving modified RR instruction, and an alternative, non-RR intervention group. In the modified RR treatment, after children had learned most letters, they manipulated magnetic letter forms to make, break, and build new words having similar spellings and pronunciations, for example, reading *and* and then changing it to *hand*, *sand*, and *band*. Teaching progressed from initial sounds to final sounds and then to medial sounds. Children added, deleted, and substituted letters in their manipulations, and also read the changed words. Later, the task became a writing task rather than a manipulation task. Findings showed that both traditional and PA-modified forms of RR enabled children to reach prescribed reading levels that qualified them to exit this remedial program. However, children who received modified RR attained prescribed levels faster than children receiving the standard program. This indicates that adding PA instruction improved RR by increasing its efficiency.

Hatcher, Hulme, and Ellis (1994) also examined whether adding PA instruction to a RR program would improve its success. They compared three instructional conditions: (1) RR by itself; (2) RR with PA added; and (3) PA by itself. Of interest here are the first two groups. The PA instruction that was added to RR involved teaching children to perform different types of PA, including segmentation, blending, deletion, substitution, and transposition of phonemes. Children also practiced linking letters to phonemes in various spelling and writing tasks. To assess effects at the end of instruction, performance of each treatment group was compared to an untreated control group both immediately and 9 months later. The participants were 7-year-old poor readers. Results showed that, following instruction, the RR plus PA group outperformed the untreated control group on five different reading measures. In contrast, the RR-only group outperformed the control group on only one reading measure. Long-term effects on reading measures were evident for the RR plus PA group, but not for the RR-only group. This is further evidence for the benefits of adding PA instruction to the RR program.

Castle, Riach, and Nicholson (1994) examined the contribution of PA instruction to reading acquisition in a whole language program. Kindergartners with low PA were assigned to treatment and control groups. Phonemic awareness instruction included segmentation, blending, substitution, and deletion. Letters were incorporated into the PA activities later in the program. Two control groups were included, one receiving an alternative, unrelated treatment and the other receiving no treatment other than the whole language instruction provided to all participants in their classrooms. Results showed that the PA-trained group spelled more words and decoded many more pseudowords than the two control groups. However, the groups did not differ in reading real words or in reading connected text. These findings indicate that adding PA instruction to a whole language program enhances students' decoding and spelling skills but not their other reading skills.

Meta-Analysis of Phonemic Awareness Instruction Studies

Now that some of the many PA instructional experiments reported in the literature have been considered, it is legitimate to wonder how representative these studies and their findings are. To address this concern, a meta-analysis is needed to determine whether the majority agree in showing that PA instruction is effective for teaching PA skills and for helping children learn to read.

The National Reading Panel (NRP) conducted such a meta-analysis. The Panel located 52 experiments that compared groups of children receiving PA instruction to control groups who received either an alternative form of instruction or regular classroom instruction (Ehri et al., 2001; National Reading Panel, 2000). The meta-analysis made it possible to combine the results of these studies and apply statistical tests to reach conclusions about the general effectiveness of PA instruction for teaching PA skills and for helping children learn to read and spell. Also, this procedure made it possible to select subsets of studies from the larger pool and examine whether effects of PA instruction were positive under specific conditions, for example, specific grades or specific ways of teaching PA.

From the 52 published experiments that were located, 96 comparisons of treatment and control groups were derived. More comparisons than studies existed because some experiments included more than one type of PA treatment or control group or more than one grade level. All experiments measured reading as an outcome of instruction. Most studies measured PA to verify that instruction was effective, and some measured spelling as an outcome as well. The experiments differed in several ways, however:

1. The participants differed. Some studies investigated preschoolers and kindergartners who had not yet learned to read. Some focused on special populations of children, either kindergartners or first graders at risk for developing reading difficulties, or children in second grade or above who were already having reading difficulties. Some studies examined children of low socioeconomic status, others examined children of middle socioeconomic status. Studies were conducted in different countries in different languages.
2. The instructional procedures and activities differed. In some studies, a specific form of PA was taught, for example, segmentation, whereas in other studies the instruction was more comprehensive, covering several PA skills. Instruction was delivered to individuals, small groups (two to seven students), or entire classes. Some studies taught students to manipulate phonemes in speech, whereas others taught phoneme manipulation with letters. The duration of instruction varied from several hours to an entire school year.
3. The instructors differed. Some studies used classroom teachers, whereas others used credentialed teachers given special instruction, research assistants, or computers.
4. The experimental designs differed. Some studies adopted a true experimental design and randomly assigned students to the treatment and control groups. In other studies, random assignment was not possible, for example, when existing classrooms were used or when teachers were assigned nonrandomly to instruct a treatment or a control group. Some studies compared performance of the trained group to performance of a control group receiving another unrelated treatment. Some employed a control group that received no special treatment beyond that received by all the students in the school. Some studies checked to make sure that instructors

followed prescribed procedures, whereas other studies did not assess fidelity to treatment. Studies also varied in the number of participants, which ranged from 9 to 383 students.

5. The literacy tests given at the end of instruction differed. Some researchers used standardized tests, whereas others devised their own tests. Most often word and pseudoword reading was measured, but sometimes text comprehension and spelling were assessed as well. Tests given to preschoolers or kindergartners having minimal literacy were simple word choice or word learning tests or invented spelling tasks rather than tests assessing conventional, unsupported reading or writing.
6. Studies differed in whether they assessed long-term as well as short-term effects of instruction. Some studies monitored how well participants learned to read in school 1 to 2 years after the PA instruction ended, whereas other studies only assessed effects right after instruction.

The statistic that was used to compare the performance of PA-instructed groups and control groups across studies was effect size, which measures how much the mean of the PA-instructed group exceeded the mean of the control group on the outcome measure in standard deviation units. An effect size of 1.00 indicates that the treatment group mean was one standard deviation higher than the control group mean. An effect size of 0 indicates that the means did not differ at all, showing that the instruction produced no effect. To judge the strength of an effect size, values suggested by Cohen (1988) are commonly used. An effect size of 0.20 is considered small; a moderate effect size is 0.50; an effect size of 0.80 or above is large. Translated into percentiles, an effect size of 0.20 indicates that the treatment moved a child from the 50th to the 58th percentile. An effect size of 0.50 indicates that the treatment moved a child from the 50th to the 69th percentile. An effect size of 0.80 indicates that the treatment moved a child from the 50th to the 79th percentile. The effect size statistic is valuable because it allows one to convert outcomes from very different studies to one metric so that average effect sizes can be calculated and compared under various conditions.

In the analysis of effects of PA instruction across studies, the following outcomes were of interest: whether trained students acquired superior PA compared with control students, and whether trained students could read and spell better than control students. Statistical tests were applied to see whether mean effect sizes were significantly greater than zero, indicating a positive effect of PA instruction, and whether effect sizes for contrasting conditions differed significantly from each other.

Figures 6.1 through 6.4 depict mean effect sizes for some of the outcomes and conditions in the meta-analysis. The bar depicts the size of the effect. The number to the right of the bars indicates the number of comparisons contributing to each effect. Not all studies contributed effect sizes to all analyses because some did not assess those particular outcomes. Effect sizes are statistically greater than zero unless marked n.s. (not significant). (For more complete findings, see Ehri et al. [2001] or the National Reading Panel report [2000]. For results of a similar meta-analysis, see Bus & van IJzendoorn [1999].)

Figure 6.1a shows that PA instruction was effective in teaching PA, with a large mean effect size $d = 0.86$. Effects on PA did not decline much on the follow-up tests administered after a delay. Phonemic awareness instruction boosted reading significantly at the end of instruction, $d = 0.53$, and also spelling, $d = 0.59$. Effects on reading and spelling declined, but were still statistically greater than zero following a delay of 2 to 15 months (Follow-up 1) and 7 to 30 months (Follow-up 2). These findings verify that PA instruction is very effective in helping students learn to read and spell.

Figure 6.1b displays effect sizes for various types of reading tests. Phonemic awareness instruction helped children learn to read real words and pseudowords on standardized as well as experimenter-devised tests. It boosted children's reading comprehension as well. However, it exerted no impact on performance in math, indicating that the contribution of PA instruction was limited to literacy and also that no halo effect was operating to boost scores of the treatment groups in general.

Figure 6.2a shows that PA instruction significantly improved reading performance in three types of readers: children progressing normally in learning to read, younger children at risk for developing reading difficulties, and older children with a reading disability. Also, PA instruction contributed significantly to reading acquisition in preschoolers, kindergartners, and first graders. Effects were significantly stronger among preschoolers and at-risk students, who tended to have low PA when they began instruction. These findings indicate that PA instruction is especially effective for improving reading when it is delivered to younger children who lack PA.

Figure 6.1. Mean effect sizes on various outcomes at immediate and follow-up test points

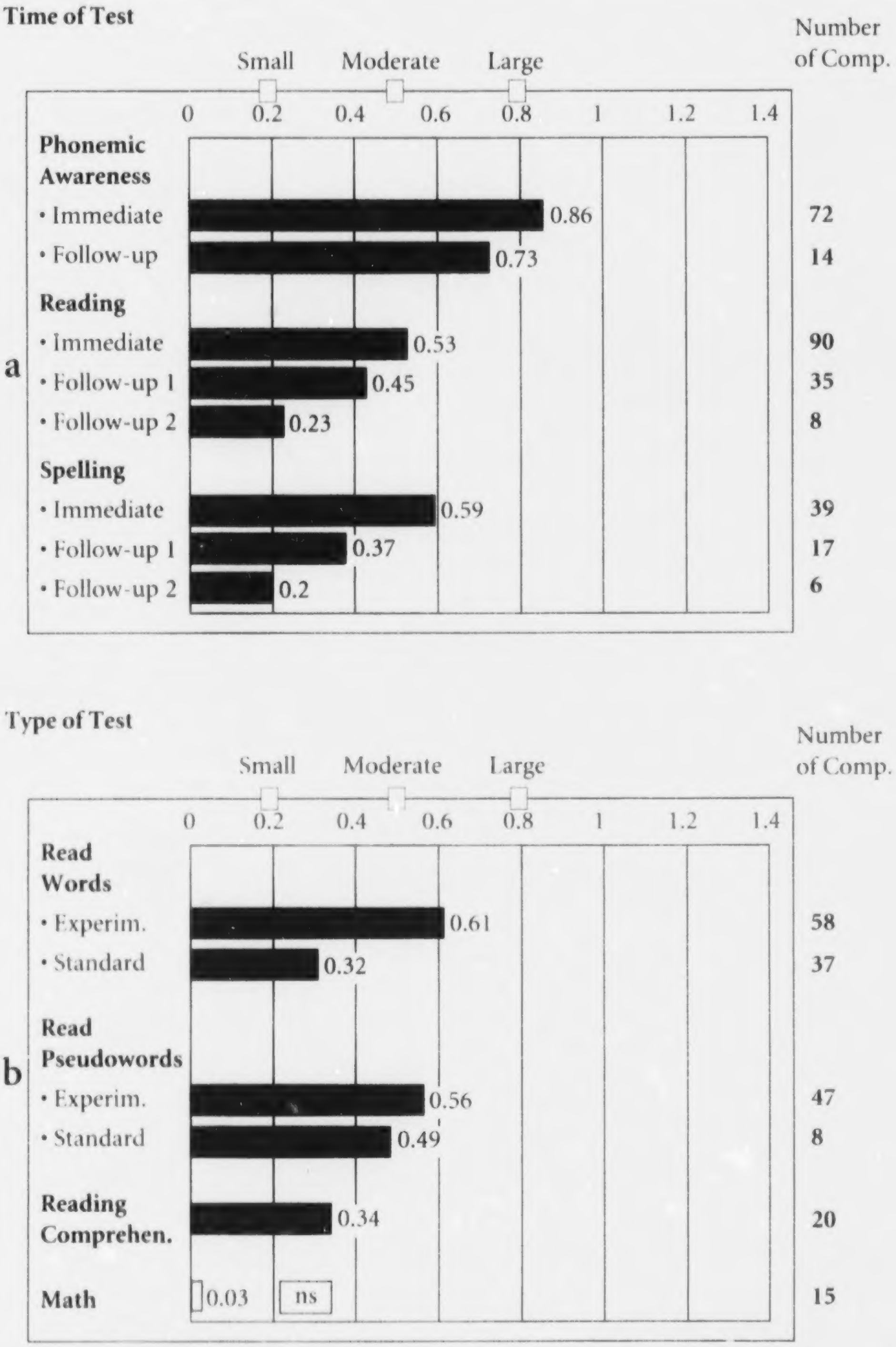
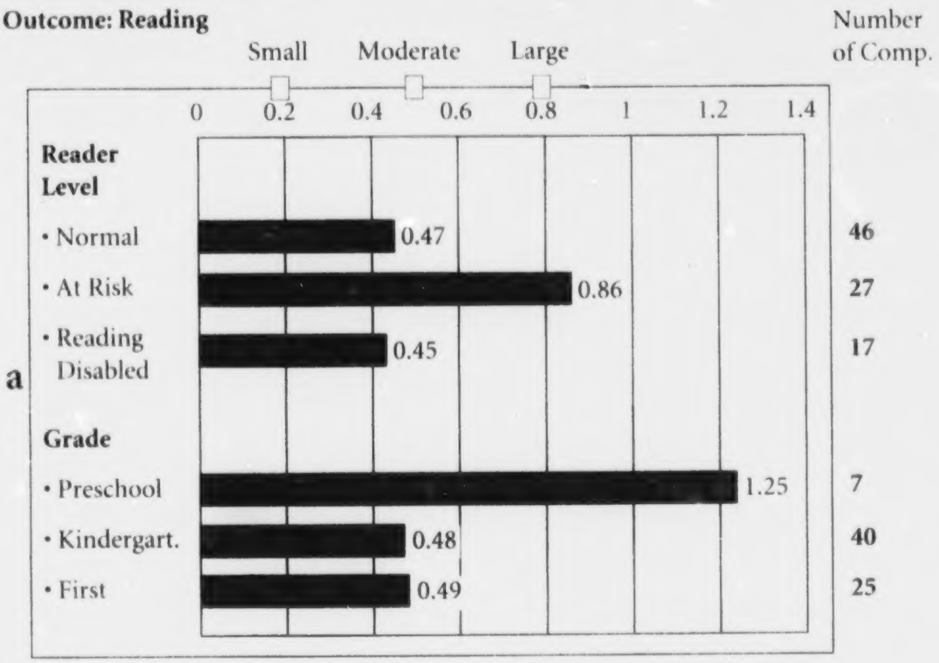
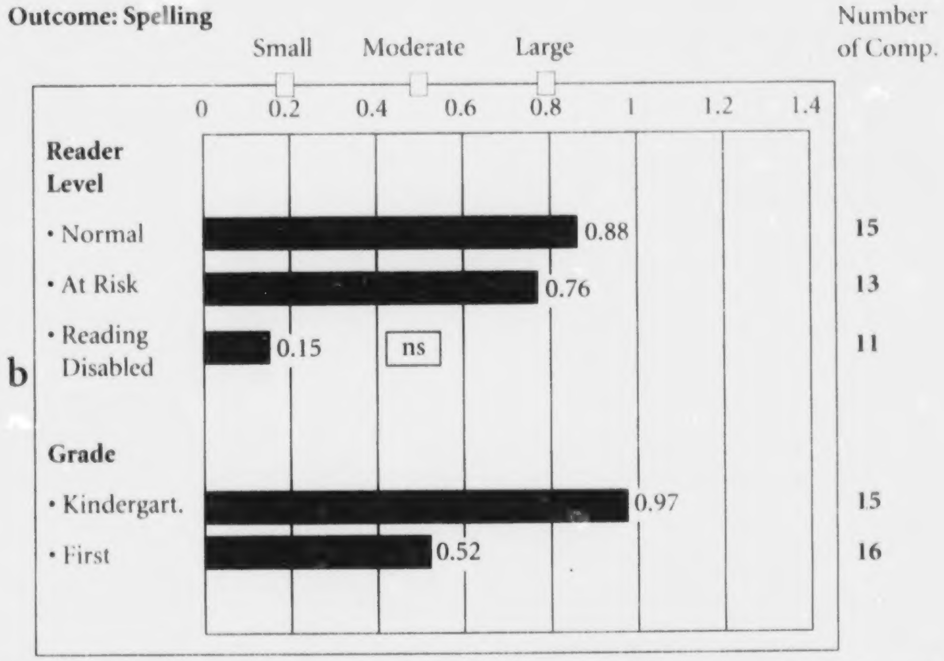


Figure 6.2. **Mean effect sizes on reading (a) and spelling (b) outcomes for normal, at-risk, and disabled readers and for students in preschool, kindergarten, and first grades**





Phonemic awareness instruction contributed to spelling development as well, but only among younger children. From Figure 6.2b, it can be seen that effect sizes were especially large for normal readers, at-risk readers, and kindergartners and were moderate for first graders. The effect sizes were boosted somewhat because spelling measures administered to the younger children typically gave credit for sound spellings as well as correct spellings of words. From Figure 6.2, it is apparent that PA instruction did not contribute significantly to spelling ability among older disabled readers, most of whom were in second grade or above. This may be because learning the correct spellings of English words requires knowledge of spelling patterns and word-specific memory along with PA. To become proficient, students may need explicit spelling instruction as well as PA instruction.

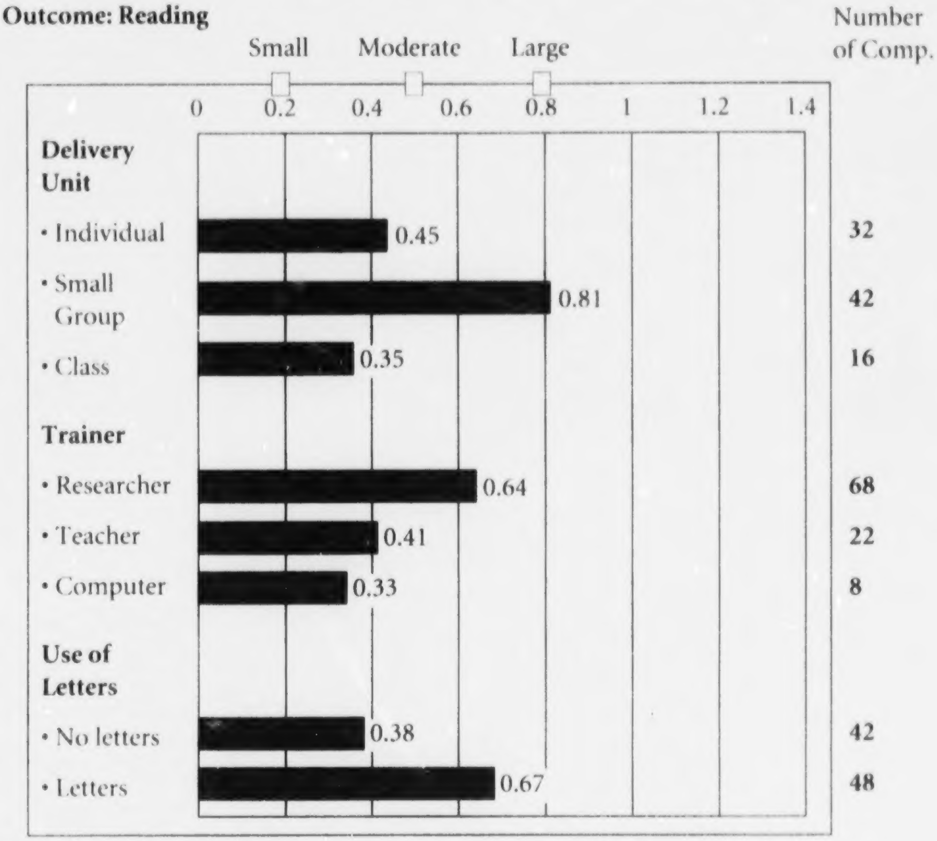
Figure 6.3 shows that PA instruction contributed significantly to students' reading ability whether it was taught to individuals, small groups, or whole classes. Surprisingly, small-group instruction produced a statistically larger effect size than individual tutoring. Perhaps this occurred because small groups provide opportunities for observational learning or they enhance learners' motivation. However, such findings are correlational. There may be some other hidden factor explaining why the 42 comparisons in the small-group pool had larger effect sizes than the 32 comparisons in the individual pool, for example, the possibility that the hard-to-teach children were tutored whereas the easy-to-teach children were taught in small groups.

Figure 6.3 further shows that PA instruction helped children read whether researchers, classroom teachers, or computers delivered the instruction. Importantly, these findings verify that teachers teaching their own students can implement PA instruction effectively.

Studies described earlier examined the effects of using letters to teach PA. Findings of our meta-analysis confirmed that there is an advantage to incorporating letters into instruction. As is seen in Figure 6.3, teaching PA through letters produced a significantly larger effect size on learning to read than teaching children to manipulate phonemes in speech only. One reason using letters is helpful is because using letters brings children closer to the transfer task of reading, which requires attention to letters.

Figure 6.4a displays variations in effect sizes depending on how long the PA instruction lasted, ranging from 1 hour to 75 hours. Findings show that even the shortest durations produced significant learning of PA and transfer to reading. Surprisingly, programs lasting the longest

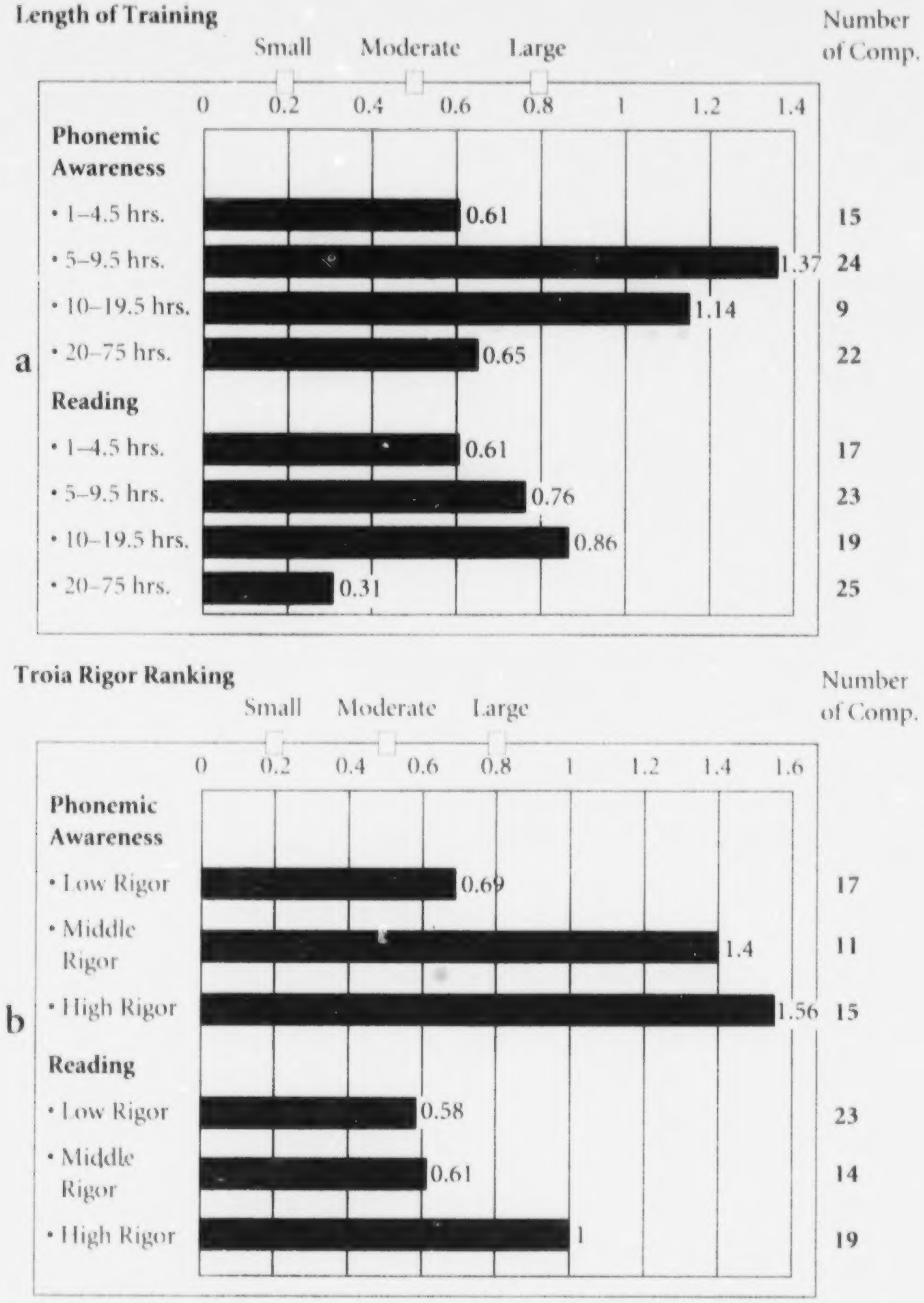
Figure 6.3. Mean effect sizes on reading outcomes for various types of delivery units, instructors, and usage of letters



(20 hours or more) produced significantly smaller effect sizes than programs lasting 5 to 18 hours. Although there may be a hidden factor explaining these findings, they suggest that PA instruction does not need to be lengthy to be effective.

The U.S. Congress asked the NRP to evaluate the findings of scientific research. The studies included in the NRP meta-analysis were all controlled experiments, but some were better designed than others. Of interest was whether larger effect sizes arose primarily from studies with strong or weak designs. While the report was being prepared, *Reading Research Quarterly* published an article by Troia (1999) that rated many of the studies in the database for their experimental rigor on criteria such as whether students were assigned randomly to treatment groups,

Figure 6.4. Mean effect sizes on phonemic awareness and reading outcomes for instructional programs lasting from 1 to 75 hours, and for experimental designs rated by Troia (1999) as having high, medium, and low rigor



whether fidelity of instructors to the treatment was checked, whether a representative sample of children was obtained, and so forth. Troia's ratings were adopted and used to examine effect sizes associated with studies judged to have low, medium, and high rigor. The results shown in Figure 6.4b reveal that the best-designed studies, not the weakest studies, produced the largest effect sizes.

Conclusion

Several conclusions can be drawn from the findings discussed here. Classroom teachers as well as researchers and computers can teach PA effectively. Phonemic awareness instruction helps many types of children learn to read, including preschoolers, kindergartners, first graders, younger children at risk, older disabled readers, low as well as middle-high socioeconomic status children, and children learning to read in English as well as other alphabetic languages. Phonemic awareness instruction helps beginners but not older disabled readers learn to spell. There are many effective ways to teach PA. Segmenting and blending are especially effective contributors to reading and spelling. Teaching children to manipulate phonemes using letters is more effective than teaching PA in the oral mode without letters. Letters help children learn PA as well as apply it in their reading and spelling. Phonemic awareness instruction does not have to last a long time to be effective. Thus, enough is known about the effectiveness of PA instruction to recommend it to primary teachers as a component of their literacy instruction.

In implementing PA instruction, teachers need to be cautious. Children will differ in their need for PA instruction, so pretesting is advised to assess who needs what type of instruction. PA instruction is not a complete reading program, but one foundational piece. There are other important accomplishments that must be taught as well to enable children to learn to read. Phonemic awareness is not an end but rather a means to enhance children's learning of the alphabetic system for use in their reading and writing.

Questions for Discussion

1. Design a lesson that teaches children to invent spellings of words in order to develop their phonemic awareness. What kind of scaffolding and feedback should be beneficial? How might attention to mouth movements be incorporated into this instruction?

2. Locate published lessons or programs that purport to teach PA, perhaps those included in the beginning reading program adopted by your school. Determine what types of PA are taught and whether print is incorporated into the instruction. Critique the lessons and their likely effectiveness based on your reading of this chapter. If found lacking, how might the instruction be strengthened?

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Appendix of IPA Symbols for Basic Phonemes in English

Symbols for 25 Consonant Phonemes

- Pairs of phonemes that differ in voicing (vocal cord vibration) but not place of articulation (to understand the voicing distinction, place your fingers on the lump of your throat and feel the absence of vibration for the voiceless member of each pair listed first, and the presence of vibration for the voiced member listed second):

/p/ (play), /b/ (big) */t/ (two), /d/ (dog)* */k/ (kind), /g/ (go)*
/f/ (fun), /v/ (very) */s/ (see), /z/ (zoo)* */θ/ (think), /ð/ (this)*
/š/ (she), /ž/ (measure) */č/ (child), /ǰ/ (just)* */ʍ/ (which), /w/ (witch)*

Note: */w/* and */ʍ/* are not distinct in some dialects but rather both are */w/*.

- Nasals: */m/ (me), /n/ (not), /ŋ/ (long, sing, sink)*

Note: In some dialects, words such as *long* may end in two consonants, */ŋ/* and */g/*, rather than one */ŋ/*.

- Liquids: */l/ (look)* , */r/ (red)*
- Glides: */y/ (yes)* , */h/ (help)* , (also */w/* and */ʍ/*)

Symbols for 16 Vowel Phonemes

- Short vowels: Short *a*: */ae/* (*can*); Short *e*: */ɛ/* (*red*); Short *i*: */I/* (*sit*); Short *u*: */ʌ/* (*but*); Short *o*: */a/* (*pot*) and */ɔ/* (*ball*)

Note: */a/* and */ɔ/* are not distinct in some dialects but rather are both */a/*.

- Long vowels: Long *a*: */e/* (*ate*); Long *e*: */i/* (*see*); Long *i*: */ay/* (*ride*); Long *o*: */o/* (*boat*); Long *u*: */u/* (*tube, boot*) and */yu/* (*cute*)

Note: The distinction here between "short" and "long" vowels is the one drawn in phonics programs. It is not the linguistic distinction referring to vowel duration.

- Diphthongs: */aw/* (*brown*), */ɔy/* (*boy*) (also the long vowels */ay/* and */yu/*)

Note: Diphthongs are vowels combined with a glide. Articulation entails movement of the lips or tongue preceding or following the vowel.

- Schwa: */ə/* (*the, away*)

Note: In many polysyllabic words, the vowel in the unstressed syllables is pronounced schwa.

- Other vowel: */U/* (*put, foot*)

Note: Phonemes may vary in additional ways across dialects. In deciding whether individuals are manipulating phonemes correctly in words, it is important to examine how they pronounce those words.

Chapter 7

The Place of Word Consciousness in a Research-Based Vocabulary Program

Michael F. Graves and Susan M. Watts-Taffe

Vocabulary research has a long if somewhat sporadic history. Among the oldest archival studies of American English vocabulary, if not the oldest, Kirkpatrick's "The Number of Words in an Ordinary English Vocabulary," was published in 1891, 8 years before E.L. Thorndike received his Ph.D. By 1910, Thorndike had begun his vocabulary studies (Clifford, 1978). Just over a decade later, in 1921, the first edition of Thorndike's *The Teachers' Word Book* was published. For about 30 years after this landmark publication, vocabulary was a central focus of educational research (Calfee & Drum, 1978). In her seminal appraisal of the influence of Thorndike's vocabulary research, Clifford (1978) concludes that his work and that of other vocabulary researchers markedly influenced educational practice, with the greatest influence being that it strongly affected the vocabulary used in school texts.

Despite this influence, during the 1950s the frequency of vocabulary research declined sharply. In a review of research published in 1978, Calfee and Drum remarked that "perusal of the current literature would suggest that the topic [vocabulary] is a vanishing species" (p. 217). In fact, neither the first edition of *What Research Has to Say About Reading Instruction* (Samuels, 1978) nor the first edition of the *Handbook of Reading Research* (Pearson, Barr, Kamil, & Mosenthal, 1984) included a chapter on vocabulary. However, reading researchers' inattention to vocabulary was relatively short-lived.

In the 1980s, Richard Anderson, William Nagy, and their colleagues at the Center for the Study of Reading, and Isabel Beck, Margaret McKeown, and their colleagues at the Learning Research and Development Center undertook programs of research on vocabulary that again made vocabulary study a vital part of educational research (see, for example, Anderson & Freebody, 1981; Beck, McKeown, McCaslin, &

Burkes, 1979; Beck, Perfetti, & McKeown, 1982; McKeown, 1993; Nagy & Anderson, 1984; Nagy & Scott, 1990). In their review of research on reading published in 1986, Calfee and Drum devoted nearly one third of their space to vocabulary, and both the second and third volumes of the *Handbook of Reading Research* (Barr, Kamil, Mosenthal, & Pearson, 1991; Kamil, Mosenthal, Pearson, & Barr, 2000) include two chapters on vocabulary.

Although vocabulary continues to be of interest to researchers (Nagy & Scott, 2000), it is currently of considerably less interest to the reading community at large, not even appearing in a recent list of hot topics in reading (Cassidy & Wenrich, 2000/2001). There are indications, however, that this is changing (see, for example, Biemiller, 2001; Hirsch, 2001). It is unfortunate that the topic has not been of much interest to the larger reading community, because we know a good deal about vocabulary and vocabulary instruction, and what we know suggests that vocabulary plays an important role in reading, in many other aspects of schooling, and in the world beyond school.

The findings of more than 100 years of vocabulary research include the following:

- Vocabulary knowledge is one of the best indicators of verbal ability (Sternberg, 1987; Terman, 1916).
- Vocabulary difficulty strongly influences the readability of text (Klare, 1984).
- Teaching the vocabulary of a selection can improve students' comprehension of that selection (Beck et al., 1982).
- Growing up in poverty can seriously restrict the vocabulary children learn before beginning school and make attaining an adequate vocabulary a challenging task (Hart & Risley, 1995).
- Disadvantaged students are likely to have substantially smaller vocabularies than their more advantaged classmates (White, Graves, & Slater, 1990).
- Lack of vocabulary can be a crucial factor underlying the school failure of disadvantaged students (Becker, 1977).

Research also reveals what is perhaps the single most important factor to consider in planning vocabulary instruction: The task of learning vocabulary is huge. Although estimates vary considerably, a reasonable estimate based on the work of Anderson and Nagy (1992), Anglin (1993), Nagy and Anderson (1984), and White, Graves, and Slater (1990) is that students learn approximately 3,000 to 4,000 words each year, accumulating a reading vocabulary of approximately 25,000 words by the end of elementary school and approximately 50,000 words by the end of high school.

A Four-Part Vocabulary Program

We cannot, of course, teach 50,000 words one by one. We can, however, combine instruction in individual words with other sorts of instruction and activities that promote vocabulary growth. Graves (1984, 1987, 1992) has described, refined, and added to such a program over the past 15 years. The current version of that program (Graves, 2000) includes four components: wide reading, teaching individual words, teaching word learning strategies, and fostering word consciousness. In this section, we will briefly discuss the rationale behind the first three components of the program. Then, in the following section, we will describe the rationale behind the fourth component, fostering word consciousness, and suggest some of the content that could be included in that component.

Before describing the four-part program we recommend, we should briefly describe our general theoretical orientation to instruction: It is cognitive-constructivist (Graves, Juel, & Graves, 2001), and it is balanced (Graves, 1998). We use the term *cognitive-constructivist* to convey a relatively conservative constructivist approach, one that would be acceptable to mainstream cognitive psychologists and that leaves plenty of room for instruction. We use the term *balanced* in the sense that it is usually used when speaking of reading instruction; however, the balance of most relevance to our four-part program is a balance between cognitive and affective factors.

Wide Reading

Both theory (for example, Sternberg, 1987) and common sense have long suggested that most words are learned from context, and recent research has verified that belief by demonstrating that word learning does take place in the context of normal reading (Nagy, Herman, & Anderson, 1985). If we can substantially increase the reading students do, we can substantially increase the words they learn. Thus, one way to help students increase their vocabularies is to increase the amount of reading they do (Anderson, 1996). In fact, some researchers believe that increasing the amount that students read is the most powerful thing we can do to increase their vocabularies (for example, Anderson & Nagy, 1992; Stahl, 1998). Regardless of whether increasing the amount of reading students do is *the* most powerful way of promoting vocabulary growth, it is one very powerful way. Anyone interested in increasing students' vocabularies should see that they read as much and as widely as possible.

Teaching Individual Words

Another way to help students increase their vocabularies is to teach them individual words. Although we cannot teach all the words students need to learn, that does not mean that we cannot and should not teach some of them (Graves, 2000; Stahl, 1998). Fortunately, research has revealed much about both effective and ineffective approaches to teaching individual words, and several excellent summaries and distillations of that research are available (Beck & McKeown, 1991; Herman & Dole, 1988; Stahl & Fairbanks, 1986). Vocabulary instruction is most effective when learners are given both definitional and contextual information, when learners actively process the new word meanings, and when they experience multiple encounters with words. Additionally, discussion is likely to be a helpful part of word study (Stahl, 1998).

Unfortunately, effective vocabulary instruction is rare in classrooms (Watts, 1995) and in basal readers (Ryder & Graves, 1994). However, much recent writing on vocabulary instruction incorporates these research findings, often along with other considerations. Nagy (1988), for example, suggests methods specifically selected to improve reading comprehension. Graves and his colleagues (Graves et al., 2001) suggest different methods for different learning goals, including teaching students to read words already in their oral vocabularies, teaching new labels for known concepts, teaching words representing new concepts, and clarifying and enriching the meanings of already known words. Blachowicz and Fisher (1996) emphasize ways of including vocabulary instruction in all classrooms.

Teaching Word Learning Strategies

A third approach to help students increase their vocabularies is to teach word learning strategies. The most widely recommended and most useful strategy to teach is that of using context (Graves, 2000; Stahl, 1998; Sternberg, 1987). Two recent reviews of research on teaching context clues (Fukkink & de Glopper, 1998; Kuhn & Stahl, 1998) indicate that the strategy can be taught, and we believe that carefully planned and robust instruction in using context clues should be part of a comprehensive vocabulary program. Blachowicz and Zabroske (1990) and Buikema and Graves (1993) describe research-based ways of incorporating this strategy into a program.

Using word parts to unlock the meanings of unknown words is another widely recommended strategy (Blachowicz & Fisher, 1996; Deighton, 1959), and doing so is well supported by research (Anglin, 1993; White, Power, & White, 1989). Graves and Hammond (1980) validated procedures for teaching prefixes, and White, Sowell, and Yanagihara (1989) validated procedures for teaching prefixes and suffixes. We are not aware of any empirically validated procedures for teaching roots, and both developing and testing such procedures and establishing principled sets of roots to teach seem desirable objectives.

Using the dictionary is another frequently recommended approach (Blachowicz & Fisher, 1996; Graves et al., 2001) in which students can learn to use word meanings themselves, and the same authors who recommend teaching students to use the dictionary have suggested what needs to be taught and learned.

Fostering Word Consciousness

The last component of the four-part program, and the one that we concentrate on in the rest of the chapter, is fostering word consciousness. In the following section, we define word consciousness and note why it is important.

The Importance of Word Consciousness

Simply stated, word consciousness refers to awareness of and interest in words and their meanings. As defined by Anderson and Nagy (1992), word consciousness involves both a cognitive and an affective stance toward words. Word consciousness integrates metacognition about words and motivation for learning words; motivation includes interest and enjoyment as well a sense of purpose.

Students who are word conscious are aware of the words around them—those they read and hear and those they write and speak. This awareness involves an appreciation of the power of words, an understanding of why certain words are used instead of others, a sense of the words that could be used in place of those selected by a writer or speaker, and cognizance of first encounters with new words. It involves an interest in learning and using new words and becoming more skillful and precise in word usage.

The process of acquiring vocabulary is complex, and for many students, acquiring the rich store of words that will help them succeed in and beyond school is a challenge. With tens of thousands of words to learn and with most of this word learning taking place incidentally as learners are reading and listening, the positive affective and cognitive disposition toward words that we are labeling "word consciousness" is crucial to learners' success in expanding the breadth and depth of their word knowledge over the course of their lifetimes. Word consciousness exists at many levels of complexity and sophistication, and it can and should be fostered among preschoolers, as well as among students in and beyond high school.

The research that indicates word consciousness should be included in a vocabulary program comes primarily from two sources. First, there is a growing realization among cognitive psychologists that motivation and affect are as important to learning as cognition (see, for example, Bransford, Brown, & Cocking, 2000; National Research Council, 1999). Word consciousness is the motivational and affective component of our vocabulary program. Second, there is increasing evidence that lack of vocabulary is a key component underlying school failure for disadvantaged students (Biemiller, 2001; Biemiller & Slonim, 2001; Hart & Risley, 1995; Hirsch, 2001). We include word consciousness in our vocabulary program because it is crucial to do everything possible to shore up students' vocabularies, particularly the vocabularies of disadvantaged students.

In the rest of this chapter, we discuss specific approaches to fostering word consciousness.

Approaches to Fostering Word Consciousness

In general, the approaches here are arranged from those that are more informal and less time-consuming to those that are more formal, more time-consuming, and more demanding on the learner.

Modeling, Recognizing, and Encouraging Adept Diction

Modeling adept diction, recognizing skillful diction in the texts students are reading, and constantly encouraging students to employ adept diction in their own speech and writing are starting points in building word consciousness. As with teaching in general, modeling is critical. Specifically, it is vital to model both enthusiasm for and proficiency in adept word usage.

Consider the difference between asking a student to close the door because it is not quite closed and asking him to close the door because it is *ajar*, the difference between describing the title character in Maurice Sendak's *Pierre: A Cautionary Tale in Five Chapters and a Prologue* as *stubborn* versus *recalcitrant*, and the difference between describing the color in a student's painting as *greenish-yellow* as opposed to *chartreuse*. When students hear unfamiliar words used to describe concepts they are familiar with and care about, they become curious about the world of words. In addition, they learn from experience that word choice possibilities are immense and varied. As their "word worlds" open up, so too do the wider worlds in which they live.

One method to model, recognize, and encourage adept diction is to use the "word-of-the-day" approach. Allocating time each day to examine a new word can be effective with students of all ages. The word can be teacher- or student-selected and might be chosen from books, magazine articles, or newspapers, or from heard contexts such as appropriate television programs, discussions, and other teachers. It often works well to begin with teacher-selected words and to present a word and its meaning, including both definitional and contextual information, an explanation of why it was selected, and examples of how it relates to the lives of one or more members of the class. When appropriate, adding relevant pictures, gestures, concrete objects, and drama increases students' enthusiasm and understanding. Further, a period for student questions and comments allows for the type of deep processing necessary for effective word learning (Stahl, 1998).

Once the responsibility for word selection has been shifted to students, motivation usually increases, as students enjoy finding new words in their worlds. Students can select words in small groups, in pairs, or individually, and they are then responsible for teaching the word to the class. Word-of-the-day activities help students to internalize a sense of word consciousness and associate this sense with both intellectual and emotional responses.

Word-of-the-day activities also encourage students to notice and appreciate the sheer volume of words that surround them, as well as the uniqueness of individual words. Students also can be encouraged to notice particular words and types of words in their everyday lives. The work of Beck, Perfetti, and McKeown (1982) and Duin and Graves (1988) focuses students' attention on finding words that have been studied in class or that are related to classroom themes in their worlds outside of school.

Students record their "sightings" as well as the contexts in which they occurred and bring their words to class, thus nurturing the link between school and the world beyond the classroom.

In addition to collecting words that relate to instructional topics, students can collect words related to themes of interest to them. For example, students might collect "athletic words" such as *agile, flexible, strong, muscular,* and *stamina* or "frightening words" such as *apparition, apocalypse, corpse,* and *ruination.*

Scott and her colleagues (1996) have studied vocabulary as a vehicle for connecting reading and writing. Within the context of literature discussion groups, they assign one student the role of word hunter, whose job it is to look for particularly interesting uses of language in the literature read by the group. This student might, for example, draw the group's attention to Sharon Creech's use of the word *lunatic* in *Walk Two Moons* to describe a mysterious stranger. Why doesn't the author use *mentally ill* or *weirdo*? How does the author's word choice relate to the character that first uses the word to describe the mysterious fellow? Such discussions can lead students to more thoughtful word choices in their own writing.

Another way to encourage adept diction in students' writing and speaking is to scaffold their use of new words. They might construct sensory webs for words likely to be useful in their writing or for words they have read and would like to understand more fully. The lines leading from the word outward provide places for students to fill in what the word smells like, tastes like, looks like, sounds like, and feels like. Scott et al. (1996), for example, report that one of the sixth graders they worked with wrote that anger smells like "hot burning coals," tastes like "dry sand burning in the desert," looks like "shattered glass on the pavement," sounds like "fingernails screeching on the blackboard," and feels like "a cold wind gripping you all over." A related technique used by Scott and her colleagues to help students expand the word choices used in their writing is to have students brainstorm words related to a keyword. For the word *anxious,* one student came up with the related words *shaky, fidgeting, worried, apprehensive, nervous,* and *impatient.*

Promoting Word Play

One of the first goals of reading instruction is to teach and reinforce the notion that printed words convey meaning. However, words and phrases can simultaneously feel good on the tongue, sound good to the ear, and incite a riot of laughter in the belly. Verbal phenomena such as homophones, homographs, idioms, clichés, and puns offer myriad opportunities for investigating language, and word-play books are available for children of all ages, as well as for adults. Students of all ages get real pleasure out of words that sound alike, words that look alike, and words that look nothing like what they mean.

Homophones and homographs. Homophones present many opportunities for enjoyment and learning. Children delight in images such as those of a "towed toad," a "sail sale," or a "Sunday sundae." One activity that many children enjoy is drawing such homophone pairs, and one approach that has proven useful is to have students fold a piece of drawing paper into quadrants so they can write homophone pairs in the boxes on the left side of the paper and draw corresponding pictures in the boxes on the right side of the paper. Games such as Homophone Bingo and Homophone Concentration offer additional possibilities for experimenting with homophones.

Some words, of course, not only sound alike, but are spelled alike, and still have more than one meaning. In fact, a large proportion of English words have more than one meaning. These homographs allow for a variety of games, including the following one taken from Lederer's *Get Thee to a Punnery* (1988). In each of the lines below, students insert a word that means the same as the word or phrase at either end; the number of blanks indicates the number of letters in the missing word:

summit __ __ __ spinning toy
hole __ __ __ fruit stone
nation __ __ __ __ __ __ __ rural area

Having students complete such puzzles can be fun and entertaining, but having them create their own puzzles can be even more valuable. As with many word-play activities, making up these types of items is well within the reach of many children and provides an active, creative, and rewarding learning experience.

Idioms, clichés, and puns. Children are often fascinated by idioms such as "A bird in the hand is worth two in the bush" and "Don't count your chickens until they're hatched." Representing as they do the language of particular groups, idioms reflect particular periods of time, particular regions of the United States, and particular cultures. Children enjoy drawing or dramatizing the literal meanings of idioms such as "Don't look a gift horse in the mouth," "Roll with the punches," and "Food for thought" and contrasting them with their figurative meanings.

Clichés are often thought of as being unimaginative and trite. In fact, they are examples of language use that has endured over time, expressing familiar sentiments and wisdom that are timeless. They are at once phrases that many are familiar with and expressions of shared human experience, making them accessible and important forms of language for students to experience. Teachers can kindle students' word awareness by being "down to earth" with them, warning them about "jumping out of the frying pan into the fire," and playing around with such phrases "until the cows come home."

Like clichés, puns are memorable and often quite clever. Advertisers often use them in jingles, and newspapers often use them in headlines. For example, the day after the Minnesota Vikings' star kicker missed a short field goal that led to the team's ousting from the playoffs, the local paper ran the headline "Kicked Out!" Richard Lederer's *Pun and Games* (1996) provides great inspiration, as well as games, for highlighting clichés and puns in the classroom.

Word-play books. Many books lend themselves to raising word consciousness with word play (for an annotated list of books celebrating words, see Hornik, 2000). Two wonderful alphabet books are Graeme Base's *Animalia* and Judith Viorst's *The Alphabet From Z to A (With Much Confusion on the Way).* Each combines clever illustrations with inviting text and appeals to both early and highly sophisticated readers. Where else will you find "crafty crimson cats carefully catching crusty crayfish" (Base, 1986, pp. 3–4)?

Two books that highlight the richness of language are Fred Gwynne's *The King Who Rained* and Andrew Clements's *Double Trouble in Walla Walla.* The first revolves around words with multiple meanings, and the second is a must for anyone who has ever felt like a nitwit, stopped for some chitchat, tried to razzle-dazzle anyone, said "okey-dokey," or wondered what all the hubbub is about.

For older children, Norton Juster's *The Phantom Tollbooth* describes Milo's adventures in the fantasy world of Dictionopolis, where rich and interesting words make their home. Louis Sachar's *Holes*, which won the 1999 Newbery Medal, is also filled with interesting words, some of which provide clues to the central puzzle of the novel, and others, like

Stanley Yelnats, which provides the palindrome of the protagonist's name, are simply fun.

Providing Intensive and Expressive Instruction

As noted previously, we have generally arranged the suggestions in this chapter from those that are more spontaneous and require less time to those that are more deliberate and require more time. In keeping with this approach, the first activity described in this section—Scott and her colleagues' (1994) technique for encouraging students to incorporate more interesting and sophisticated vocabulary into their writing—is the more spontaneous activity. The next two activities—Beck and McKeown's intensive instruction and Duin's expressive instruction (Beck et al., 1982; Duin & Graves, 1988)—are more deliberately structured and more time-consuming.

The basic logic underlying the program of Scott and her colleagues is this: Reading and writing are reciprocal processes. Significant word learning—and, we would say, the opportunity to develop word consciousness—requires children to be immersed in a situation in which rich, precise, interesting, and inventive use of words is valued. Employing quality children's literature that contains rich, precise, interesting, and inventive use of words; encouraging students to identify these apt and creative uses of language; honoring these words and phrases by posting them prominently around the room; and frequently calling students' attention to them creates such an environment. Thus, Scott and her colleagues immerse students in good children's literature, encourage them to select words and phrases they value, and have them post these words and phrases in the classroom. They then encourage students to "borrow" the words and phrases they have identified in their reading and use the words in their writing. Next, they design writing activities that encourage the use of rich and varied vocabulary, and they suggest students "catch" the words and phrases on the board, modify them to fit the subjects they are writing about, and then use these modifications of professional writers' phrasing in their own writing.

One of the books the children read, enjoyed, and found many interesting words and phrases in was Natalie Babbitt's *Tuck Everlasting*. A number of words and phrases from the book were copied and posted around the classroom, and many students were able to incorporate these in their writing. For example, one of the phrases from *Tuck Everlasting* that a student decided to use was "a great potato of a woman." In the student's writing, this phrase became "a long string bean of a man," which is an interesting transformation and a vivid image.

Another and more elaborate borrowing came from the following paragraph of Babbitt's novel:

> "So," said Tuck to himself. "Two years. She's been gone two years." He stood up and looked around, embarrassed, trying to clear the lump from his throat. But there was no one to see him. The cemetery was very quiet. In the branches of the willow behind him, a red-winged blackbird chirped. Tuck wiped his eyes hastily. Then he straightened his jacket again and drew up his hand in a brief salute. "Good girl," he said aloud. And then he turned and left the cemetery, walking slowly. (1975, p. 138)

Recast by a student, the prose was transformed into this poem:

In Loving Memory
Winifred Foster
Jackson
Dear Wife
Dear Mother
1870–1948
"So," said Tuck to himself
gone two years
Embarrassed
clear the lump from his throat
Quiet cemetery
Black bird chirped
Wiped his eyes
"Good girl," he said out loud
Quickly departed
Sadness filled the air.

—Kirn (Scott et al., 1994, p. 43)

It is especially noteworthy that in activities such as these, students are both learning something about vocabulary and learning something about—and perhaps coming to appreciate—the author's craft. Although the previous activity focuses more on writing than vocabulary, a vocabulary activity that spills over into a language activity is something to celebrate rather than decry.

The activities suggested by Beck and McKeown and by Duin are similar. Beck and McKeown's goal is full understanding, whereas Duin's goal is full understanding coupled with use of the words in writing. Here, we will describe the two activities together, providing a thumbnail sketch of the procedures. The first step is to select a small set of words that are semantically related. One set used by Beck and McKeown—*rival, hermit, novice, virtuoso, accomplice, miser, tyrant,* and *philanthropist*—contains words that refer to people. A set used by Duin—*advocate, capability, tether, criteria, module, envision, configuration,* and *quest*—contains words that can be used in talking about space exploration.

The next step, the central part of the instruction, is to have students work extensively and intensively with the words, spending perhaps half an hour a day over a period of a week or so with them and engaging in a dozen or so diverse activities with them—really getting to know them, discovering their shades of meaning and the various ways in which they can be used, and realizing what interesting companions words can be. Beck and McKeown's activities, for example, included asking students to respond to words like *virtuoso* and *miser* with thumbs up or thumbs down to signify approval or disapproval; asking which of three actions an *accomplice* would be most likely to engage in: robbing a bank alone, stealing some candy, or driving a getaway car; and asking such questions as "Could a *virtuoso* be a *rival*?" "Could a *virtuoso* be a *novice*?" and "Could a *philanthropist* be a *miser*?" Duin's activities included asking students to discuss how *feasible* space travel might soon be, asking them how a space station could *accommodate* handicapped persons, and asking them to write brief essays titled "Space Shorts," in which they used the words in dealing with such topics as the foods that might be available in space.

The third step, which was used only in Duin's expressive instruction, is to have students write more extensive essays using as many of the taught words as possible, playing with them and exploring their possibilities. Duin's students appeared to really enjoy this activity. As their teacher observed, "Students who were asked to write often and use the words in written class work showed great involvement in their writing." The students also showed that they could indeed use the new words adroitly. One student, for example, noted that "the space program would be more *feasible* if we sent more than just astronauts and satellites into space" and then suggested that designers should "change the whole *configuration* of the space shuttle so that it could *accommodate* more people."

Finally, we would add a fourth step. This step involves direct discussion with students about the word choices they make, why they make those choices, and how adroit use of words makes speech and writing more precise, more memorable, and more interesting.

Involving Students in Original Investigations

The activities described in the previous sections call students' attention to words in various ways, some of which are more deliberate than others. This section addresses the role of still more systematic efforts—research conducted by students themselves—in the development of word consciousness. Such original investigations centered on vocabulary provide a wealth of opportunities for increasing word consciousness. There are many options for investigations, some centered on text, some on speech, and some on interviews of language users.

Investigations focusing on written text are particularly feasible because the data sources are readily available. One option, appropriate for secondary students, is to investigate the vocabulary used in various texts. For example, students might compare the typical number of words in articles in *USA Today* and *The New York Times*. As part of such a study, they could use some metric of word difficulty to examine the differential difficulty of the vocabulary in the two papers, perhaps tallying words beyond the first 10,000 most frequent in Carroll, Davies, and Richman's *The American Heritage Word Frequency Book* (1971). Such a study could lead to fruitful discussions of why those differences exist, as well as a discussion of the reading process and text features associated with lower and higher levels of text difficulty.

Investigations of spoken language are somewhat more difficult because the language must be recorded before it can be analyzed. However, one readily accessible source of spoken language is television. Middle grade students might enjoy analyzing the vocabulary used in cartoons, looking perhaps for colorful adjectives used by the characters. Similarly, secondary students might enjoy searching police dramas, medical series, or nature programs for subject-specific terminology. More demanding tasks might involve recording language use in natural settings. For example, students could work in small groups to study vocabulary use within particular contexts such as the school cafeteria, the gym during basketball practice, or places where they work. Students with very young siblings might record approximately 10 minutes of talk each week over a period of a month and draw some conclusions about the content of their siblings' vocabularies and, possibly, changes in that content over time.

Attitudes toward words and phrases or usages of different groups offer additional possibilities. Students could compile a list of currently used "hip" words from their peers, compile a list of past hip words from their parents or other adults, and interview representatives of both groups about their reactions to the words. Greenman (1983), for example, has listed a number of (now dated) hip expressions. Students might take such a list and interview their parents and other adults to see if they used them in the past, if they now use them, and what their present response is to them. Students could ask similar questions of their peers.

Alternately, or in addition, students could collect contemporary terms from their peers, and perhaps ask their parents and other adults if they know their meanings and determine how they react to them. It would be interesting to compare not only the actual words used to represent various concepts but also the concepts the words represent. Which new words represent the same concepts that were important to teenagers 25 or 30 years ago? Which words represent concepts that are important to teenagers today but were less important, or even unheard of, 25 or 30 years ago? Comparing a dictionary published 20 years ago with one published more recently is another way to study changes in words and concepts.

Another possibility, particularly appropriate for Internet users, is for students to investigate usage variations across geographic areas. Minnesotans, for example, use *rubber binders* to hold things together. Is their use restricted to Minnesota? Wisconsin students look for a *bubbler* if they are thirsty. What do Californians, New Yorkers, or Floridians drink from? E-mail offers a convenient way to ask these and other questions about word usage.

More ambitious than any of these investigations, however, and an excellent example of the sort of learning experience that investigations can provide and the quality of work students are capable of, is a project completed by Scott Rasmussen and Derek Oosterman (1999), two seniors at Minnetonka High School in Minnesota, USA. Scott and Derek's project, which they completed as part of an advanced placement psychology class, was designed to investigate procedures for teaching vocabulary. Their goal was to "determine the best means of vocabulary acquisition in high school students" (p. 1). They began with a review of the literature. Based on their reading, they then developed the following set of hypotheses:

> Methods with a weightier impact on neural connections will have greater success in encoding, storage, and retrieval. Processing is theorized to be stronger when it is applied (1) continuously and frequently, (2) approached explicitly and actively, and (3) aided with creative clues incorporating several senses. (p. 1)

To investigate these hypotheses, Scott and Derek worked with three English teachers and 12 high school classes and arranged a number of experimental comparisons. For example, in one experiment,

> Classes were presented the words in ways successively involving more and stronger sensory clues. The first class was a control, and took the test with absolutely no instruction, or with zero senses involved. The next class was presented the information visually on an overhead, but with no auditory instruction. The third class was presented the information verbally, but with no visual information. The last class learned with the aid of both the verbal sense with the overhead and the auditory sense with the researchers reading the words and definitions. (pp. 1–2)

The hypothesis investigated in this part of the study was confirmed: Incorporating more senses led to better word learning, with the four groups described receiving scores of 42%, 77%, 74%, and 86%, respectively. Not surprisingly, other results confirmed some of the hypotheses and failed to support others.

The point is not so much what Scott and Derek learned about vocabulary instruction as the extent to which the experience is likely to leave them with a heightened awareness of words. We have corresponded with one of these young researchers, Scott, and he reports that he now pays more attention to words than he did before the study. "Before the study," he wrote, "I never gave vocabulary much thought.... In regular conversations and school classes now, I am increasingly cognizant of how words can influence perception and meaning." Although investigations as complex as Scott and Derek's are likely to be rare, almost any study in which students examine some lexical phenomena is apt to leave them more conscious of words.

Teaching Students About Words

Much of what we have covered thus far regarding promoting word consciousness involves students in becoming aware of words, manipulating them, appreciating them, and playing with them in ways that do not involve explicit instruction. In this final section, we consider some knowledge about words that teachers and teacher educators should have and the possibility of explicitly instructing students in this knowledge. The section draws heavily on a recent chapter by Nagy and Scott (2000) in which these researchers discuss the complexity of word knowledge and the role of metalinguistic awareness in learning words. Here, we consider these two matters in turn.

The complexity of word knowledge. According to Nagy and Scott, if we are to understand the processes underlying students' vocabulary growth—and, we would add, if we are to effectively assist that growth—we must recognize five aspects of the complexity of word knowledge. These five aspects are incrementality, multidimensionality, polysemy, interrelatedness, and heterogeneity.

Word learning is incremental; that is, it proceeds in a series of steps. As Clark (1993) has pointed out, the meanings young children initially assign to words are incomplete, but over time these meanings become increasingly refined until they eventually approximate those of adults. *Dog*, for example, may at first refer to any small animal such as a dog, cat, hamster, or squirrel, and only later be applied exclusively to dogs. School-age children and adults follow a similar course in learning many of the words they eventually master. Dale (1965) attempted to capture the incremental nature of word learning by proposing four levels of word knowledge: (1) never having seen it before; (2) knowing there is such a word, but not knowing what it means; (3) having a vague and context-bound meaning for the word; and (4) knowing and remembering the word. Dale's fourth level could be further broken down into having a full and precise meaning versus having a general meaning or using the word in writing versus only recognizing it when reading. However levels of word knowledge are defined, it is clear that reaching high levels is no mean task. McKeown, Beck, Omanson, and Pople (1985) found that even 40 high-quality instructional encounters with words did not bring students to a ceiling. It is also clear that high levels of word knowledge are needed to effect reading comprehension and that only robust instruction produces such high levels (Beck et al., 1982; Stahl & Fairbanks, 1986).

The second aspect of word knowledge, multidimensionality, is in some ways a qualification of the first aspect. Although it is useful to think of levels of word knowledge, there is no single dimension along which differences in word knowledge can be considered. Calfee and Drum (1986), for example, note that knowing a word involves "depth of meaning;

precise usage; facile access...the ability to articulate one's understanding; flexibility in the application of the knowledge of the word; the appreciation of metaphor, analogy, word play; the ability to recognize a synonym, to define, to use a word expressively" (pp. 825–826). To this, we would add a central theme of this chapter: Word knowledge has both a cognitive and an affective component.

The third aspect of words, polysemy, refers to the fact that many words have multiple meanings. Polysemy is more frequent than it is often thought to be; many words have multiple meanings, and the more frequently a word is used, the more likely it is to have two or more meanings. Additionally, it is worth recognizing that the multiple meanings of words range from cases in which the meanings are completely unrelated (the *bank* of a river versus the *bank* where you cash checks) to cases in which the differences are so subtle that it is difficult to decide whether they are indeed different meanings (*giving* Mary 10 dollars versus *giving* Mary a kiss). Moreover, words virtually always gain some meaning from the context in which they are found, with the result that meanings have infinite nuances.

Interrelatedness is the fourth notable aspect of words: A learner's knowledge of one word is linked to his or her knowledge of other words. To use Nagy and Scott's example,

> How well a person knows the meaning of *whale* depends in part on his or her understanding of *mammal*. A person who already knows the words *hot*, *cold*, and *cool* has already acquired some of the components of the word *warm*, even if the word *warm* has not yet been encountered. (p. 272)

The last aspect of words Nagy and Scott list is heterogeneity: What it means to know a word is dependent on the type of word in question. To again use Nagy and Scott's example, "knowing function words such as *the* or *if* is quite different from knowing terms such as *hypotenuse* or *ion*" (p. 273). However, it is not just different words that require different sorts of knowing. Different word users require different sorts of word knowledge. For example, as a potential purchaser of a diamond engagement ring, a young man is certainly better served if he has some knowledge of diamonds. As a seller of diamond rings and possibly a large-scale purchaser of diamonds, a jeweler needs and typically has much more knowledge of diamonds than her customers, and as the artisan and artist who shapes a beautiful stone from an unremarkable piece of rock, a diamond cutter must have richer and quite different knowledge than the jeweler.

As a final aspect of words to consider, we would add number to Nagy and Scott's list. As we emphasized earlier, a competent reader needs to learn a huge number of words—tens of thousands of them. This aspect of word learning is central to consider as one plans a program of vocabulary instruction.

The role of metalinguistic awareness in word learning. Recently, a certain sort of metalinguistic awareness, phonemic awareness, has been shown to have a huge effect on learning to read. Here, we briefly consider the question of what sorts of metalinguistic awareness of words and word learning are important to teacher educators, teachers, and students. With respect to teacher educators and teachers, the question can be answered easily. Everything in this section of the chapter, everything in Nagy and Scott's chapter, and much of the information contained in the references to Nagy and Scott's chapter is important for teachers and those who prepare teachers. Understanding incrementality, multidimensionality, polysemy, interrelatedness, heterogeneity, and number cannot help but be valuable as teacher educators work with teachers and teachers work with students. Additionally, the second edition of Larry Andrews's *Language Exploration and Awareness: A Resource Book for Teachers* (1998) offers a number of useful insights about words and other aspects of language for teachers and teacher educators.

The answer with respect to students is not arrived at as easily. Although some metalinguistic awareness about words and word learning can be valuable to students, just what students need to learn and how they can best learn it are matters yet to be decided. One could attempt to directly teach students a body of knowledge about words much like instruction in traditional grammar was once used to teach knowledge about sentences. We strongly suspect that such an attempt would yield poor results, however, and perhaps even produce a negative attitude toward words much like that grammar instruction often produced toward language study. Instead, it seems likely that much of this knowledge should be embedded in students' ongoing work with words and be brought to conscious attention as appropriate opportunities arise.

Here are three examples. Polysemy can be dealt with when students are being instructed in using dictionaries or when they are actually using them to look up word meanings. Certainly, one of the principles students should follow when looking up definitions is to choose the definition that fits the context in which they find the word, and this means recognizing that words have different meanings, which are both shaped and revealed by context. Incrementality can be dealt with when students are learning to use context to unlock word meanings. Students learning to use context clues to identify word meanings need to recognize that a single instance of a word in context is likely to reveal only a small increment of a word's meaning, but that each additional instance of the word in context is likely to reveal another increment. Finally, interrelatedness can be dealt with when students are learning new concepts, particularly when they are learning concepts in a relatively unfamiliar domain. Students who are studying literary elements of narratives, for example, will need to learn the meanings of *rising action*, *falling action*, and *plot* as part of learning the meaning of *climax*, and the context of their doing so provides an excellent opportunity for introducing the notion of the interrelatedness of words.

Students also will learn a lot about words as a result of engagement in many of the informal learning experiences described throughout this chapter. The adept diction that professional authors use is possible because there are so many different words available to choose from. Much word play works because words have multiple meanings (for example, puns). Intensive instruction is necessary because word learning is an incremental process. These and other insights about words can be briefly pointed out as students participate in these activities.

Concluding Remarks

The goal of this chapter has been to define and elaborate on the concept of word consciousness, to argue for the importance of word consciousness as a deliberate goal of vocabulary instruction, and to suggest some approaches for fostering word consciousness. Word consciousness is a disposition toward words that is both cognitive and affective. Students who are word conscious know many words, and they know them well. Equally important, students are interested in words, and they gain enjoyment and satisfaction from using them well and from seeing or hearing them used well by others. They find words intriguing, recognize adroit word usage when they encounter it, use words adroitly themselves, are on the lookout for new and precise words, and are responsive to the nuances of word meanings. They also are cognizant of the power of words and realize that they can be used to foster clarity and understanding or to obscure and obfuscate matters.

Developing students' word consciousness is important because the task of learning words is huge; over the 12 years of elementary and secondary schooling, students must learn tens of thousands of words. Moreover, if their word knowledge is going to help them better understand what they read and if they are going to productively use the words they know in their speech and writing, they need to learn words thoroughly. Given the size and complexity of this task, developing students' word consciousness so that they have both the will and the skill to improve their vocabularies is essential.

There are many methods of fostering and nurturing students' word consciousness. In this chapter, we have suggested a handful of them. Modeling involves teachers' deliberate use of words that may intrigue and challenge students; using *chartreuse* instead of *greenish-yellow* was one example. Encouraging and recognizing adept diction involves creating contexts in which students can experiment with new words and praising them for their efforts; using "word-of-the-day" activities was one suggested approach. Promoting word play involves just that—getting students involved in word play of various sorts; giving students opportunities to play with idioms, clichés, and puns was one method illustrated. Providing intensive instruction—teaching words fully so that students internalize rich and deep word meanings—is another useful approach; the activities suggested by Beck, Perfetti, and McKeown (1982) are just a few ways of doing this. Providing expressive instruction—using approaches that prompt students to incorporate new words into their writing—is yet another way to encourage word consciousness; Duin's work (Duin & Graves, 1988) provides a good model for doing so. Involving students in investigations like the one Scott Rasmussen and Derek Oosterman (1999) did can provide excellent opportunities for active learning. Teaching students about some interesting aspects of words as Nagy and Scott (2000) suggest is the final approach we suggested. Additionally, many of the sources cited offer additional approaches; following many paths to word consciousness makes good sense. What also makes good sense is to keep most efforts to foster word consciousness light, encouraging a playfulness similar to that shown in these snippets of word play:

> If ignorance is bliss, why aren't more people happy?
> Why is the man who invests all your money called a broker?
> When cheese gets its picture taken, what does it say?

Questions for Discussion

1. Think of students you are currently teaching or have taught in the past. Identify one or two who show evidence of a developing sense of word consciousness. Describe the characteristics of these students that lead you to believe that they are developing word consciousness.

2. Describe two things you can do to foster word consciousness among your students with very little preparation. Be as specific as possible. Spend 10 to 15 minutes planning one of these activities, and then do it. Afterward, take a few minutes to think about how it went.

3. Think of a substantive, long-term plan you can put into effect to foster word consciousness among your students. Identify the things you will need to do to complete your planning and to implement your plan. Explain how this plan will fit in with the rest of your reading program. Be specific about your instructional goals, the materials you will use, and your instructional procedures. Discuss why this plan is a particularly strong one for your classroom.

4. How would work with word consciousness differ with primary grade students as compared with upper elementary and middle grade students? In what ways is it similar for these groups of students? Now consider the case of more able readers versus less able readers. How would your approach to fostering word consciousness differ and how would it be the same for these two groups of children?

5. Assume that you have been asked to share with your colleagues some of the knowledge you have gained about word learning from this chapter. How would you explain each of the following two dimensions of word learning? Provide original examples to accompany each explanation and include a discussion of why it is important for teachers to understand these dimensions.

    1. the complexity of word knowledge

    2. the role of metalinguistic awareness in word knowledge

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Chapter 8

Reading Fluency: Its Development and Assessment

S. Jay Samuels

In 1997, the U.S. Congress asked the Director of the National Institute of Child Health and Human Development to convene a panel to assess the status of research-based knowledge regarding the effectiveness of various approaches of reading instruction to guide teachers into practices that have the best scientific support. I served as a member of this panel and many of the concepts discussed in this chapter can also be found in the final report of the National Reading Panel (NRP), *Teaching Children to Read* (2000). The NRP was fortunate in having available the report of the National Research Council, *Preventing Reading Difficulties in Young Children* (Snow, Burns, & Griffin, 1998). This report states, "Adequate progress in learning to read English (or any alphabetic language) beyond the initial level depends on sufficient practice in reading to achieve fluency with different texts" (p. 4). The report also states,

> Because the ability to obtain meaning from print depends so strongly on the development of word recognition accuracy and reading fluency, both of the latter should be regularly assessed in the classroom, permitting timely and effective instructional response when difficulty or delay is apparent. (p. 7)

Although there is universal recognition that fluency is important, too little is done in the classroom to develop this important level of skill. Reutzel and Hollingsworth (1993) claim,

> The development of reading fluency has been a neglected part of reading instruction despite the fact that many reading authorities consider it to be an important part of the reading curriculum. In recent years, researchers have turned increasing attention toward unraveling the complexities of how reading fluency is developed and how it can be properly assessed. (p. 325)

This chapter addresses several fundamental issues, including what fluency is, why it is important, how it is assessed, and what methods build it.

What Is Reading Fluency?

Fluent readers are characterized by the ability to read orally with speed, accuracy, and proper expression (National Reading Panel, 2000). Fluency is defined in *The Literacy Dictionary: The Vocabulary of Reading and Writing* as "freedom from word identification problems that might hinder comprehension" (Harris & Hodges, 1995, p. 85). In this definition, word identification skill is linked with comprehension. Fluency is important because it exerts an important influence on comprehension; that is, to experience good comprehension, the reader must be able to identify words quickly and easily.

Logan (1997) describes the properties of fluent word recognition as being fast, effortless, autonomous, and unconscious. In other words, the word recognition process in fluent reading is so fast and effortless that readers are unaware that they are reading. Furthermore, the process may be so autonomous that when readers see a sign containing a text, the readers cannot prevent themselves from reading it. The final and the most important property of fluent reading is the ability to perform two difficult tasks simultaneously, as, for example, the ability to identify words and comprehend a text at the same time.

The Changing Concept of Fluency

In the last two decades, the understanding of what is involved in reading fluency has been altered and enlarged. In the 1974 LaBerge and Samuels article on automatic information processing in reading, the emphasis was on the word recognition processes. This same focus is reflected in the Harris and Hodges (1995) dictionary definition, which states that fluency is freedom from word identification problems. The latest conceptualizations of fluency, however, have been extended beyond word recognition processes and now include comprehension processes as well (Thurlow & van den Broek, 1997).

Decades ago, no one thought of automaticity (or fluency) in terms of processes that foster active constructive comprehension. The act of comprehension, however, depends on inference generation, many of which occur automatically. To understand a text, the reader must build a coherent mental representation of what is being read, especially if the text itself is faulty or inadequate. For example, if one attempts to construct a coherent representation of a skimpy text such as, "Billy broke his brother's brand new bike. The next day Billy showed up with fresh bruises on his arm," several inferences are required. One inference is that Billy's brother became angry because Billy broke his bicycle, and another is that he hit Billy, causing the bruises on Billy's arm. Skilled readers make these inferences automatically to construct a coherent representation of the text. Thus, we see that current concepts of what is involved in becoming a fluent reader have been enlarged to include both the word recognition-decoding process as well as the comprehension process. In recent years, researchers have turned increasing attention toward unraveling the complexities of how reading fluency is developed and how it can be assessed properly.

How the Mind Works When Reading: Differences Between Beginning and Fluent Readers

Learning to read fluently is difficult because many components of the reading process must be coordinated seemingly all at the same time. Some of the components of the reading process that must be coordinated include word recognition, accessing word meaning, deciding on the correct meaning of the word, grouping words into grammatical units, generating inferences, and using reader knowledge to construct a coherent, understandable model of the text. Unfortunately, the human mind has only limited ability to process information, and the need to process all the component tasks of reading is especially problematic for the beginning reader. During the initial learning-to-read stage, the student may feel overwhelmed by all the demands.

Fleisher, Jenkins, and Pany (1979) addressed the problems of the beginning reader by stating,

> The basic notion is that individuals possess limited amounts of processing space, and that decoding and comprehension are separate but interrelated tasks both requiring this space. The more processing space consumed by decoding, the less processing space is available for comprehension. Thus, inefficient decoding can detract from comprehension. (p. 45)

What are the most basic processes that all readers use? Whenever we read, three basic processes are involved:

1. Decoding. Decoding is the ability to pronounce the words printed on the page. When we see the letters *d-o-n-k-e-y*, we say "*/donkey/*." Word meaning is not an essential element in decoding; only the ability to say the word is required. For example, there are Jewish children in the United States who attend Hebrew school where they learn how to decode Hebrew texts in preparation for their confirmation. However, because these children usually do not speak or understand the Hebrew language, they do not comprehend what they are decoding. One might say the children are "barking at print."
2. Comprehension. Comprehension is a process in which meaning is constructed using information from the printed page and the knowledge stored in the head of the reader as the building materials.
3. Attention. To decode and comprehend text, attention is required. Attention is the cognitive energy used in mental processing tasks such as decoding and comprehending. It is a resource that is available in limited quantity, and the processing demands required in reading may exceed the amount of attention that is available.

How does the nonfluent reader engage in these three basic processes? The problem facing the beginning reader is that at any given moment there is a limited amount of processing space or attention available for decoding and comprehension, and each task by itself occupies a considerable amount of the limited processing space available. The beginning reader finds the dual tasks of decoding and comprehension require more attentional energy than is available. To overcome this dilemma, the beginner employs a "divide and conquer" strategy; that is, the student breaks the larger task into smaller parts and completes one task before starting the next. First, the beginning reader decodes the words by directing attention to sounding out the words. When the words are decoded, the student then switches attention to comprehension and tries to understand what is printed on the page. By alternately switching attention back and forth from decoding to comprehension, the beginning reader is able to work through the text, but the progress is slow and difficult and places a heavy burden on memory.

What is the reading process for the fluent reader? After extended reading practice, the amount of attention required for the decoding task decreases substantially. For the fluent reader, the decoding task is fast and easy. It appears to be so automatic that the student hardly seems to be aware of the process. One of the reasons the decoding task has become easier is that the student is able to automatically recognize the roughly 300 common words that make up approximately 85% of the words encountered in day-to-day reading. Words that are recognized automatically are processed as holistic units. Thus, what the fluent reader holds in memory are entire meaningful words, not just parts that alone have no meaning. When the student is able to recognize words with ease, the bulk of the attentional resources are available for comprehension. A critical difference between beginning and fluent readers is that fluent readers are able to handle the dual tasks of decoding and comprehending at the same time, whereas beginners can only do one task at a time. As we shall see subsequently, the fluent reader's ability to handle two tasks together provides teachers with a test for determining when a student has reached the fluent reading stage.

At this point one may ask, if the goal of reading instruction is to recognize words automatically as an entire holistic unit, why not teach the beginning reader to recognize whole words from the start? Perhaps beginning reading instruction should ignore instruction on phonics and on word recognition skills in favor of instruction devoted solely to holistic word recognition and comprehension. However, experiments have shown that the size of the visual unit used in word recognition depends on the amount of reading experience the student has had rather than the reading method used by the teacher. One study (Samuels, LaBerge, & Bremer, 1978) included second graders, fourth graders, sixth graders, and college students; these grade levels were chosen because the students had different amounts of reading experience. The students were asked to read common words that were presented one at a time by a computer. Words used varied in length from short to long, but they were all high-frequency words commonly encountered in reading. The students were instructed to press a button if the word presented on the computer screen was an animal word such as *dog*, *bird*, *horse*, or *robin*. The computer measured the elapsed time between the presentation of the word on the computer screen and the button press when the student decided if the word on the screen was an animal word.

The findings from the study were interesting. The second graders, who had the least experience and practice at reading, used letter-by-letter processing. Those with the most experience and practice with reading, the sixth graders and college students, used the entire word as the unit of word recognition. The fourth graders used a unit that was larger than the single letter but not quite the entire word.

The study was replicated using students who were using a literature-based approach to instruction in which there was an emphasis on comprehension and a de-emphasis on phonics, and the results were the same. These studies strongly suggest that there is a developmental sequence in the size of the visual unit used in word recognition, and the size of the unit seems to depend on how much reading one has done. Usually, by the time a student is using the entire word as the unit of word recognition, as were the sixth graders and the college students who had the most reading practice, we can say that the student is an automatic or fluent reader. In fact, one of the indicators of reading fluency, which is not usually presented in the research literature, is the ability to identify a common word as a holistic unit. To summarize the differences between beginning and fluent readers, one may say that beginning readers cannot simultaneously decode and comprehend a text, whereas fluent readers can do both tasks at the same time.

Stages in Word Recognition Skill

For the sake of simplicity, we can identify three stages in word recognition skill:

1. Nonaccurate stage. The first stage is the nonaccurate stage, when the student has difficulty identifying words in a beginning reading text. Obviously, this occurs during the early period of formal reading instruction.
2. Accurate but not automatic stage. With appropriate instruction, which includes exposure to a wide variety of skills such as reading in context as well as instruction in phonics, the student acquires the ability to recognize some words as "sight words" and other words by sounding them out. When listening to students at this stage read orally, one notes that the rate of reading is slow and laborious. Often the student has to sound out the words a part at a time, and there is little expression in the voice. If the student is unfamiliar with the topic being read, the student has little understanding or recall of what was read orally. If the student wishes to understand the passage, he or she must reread the passage several times.

3. Accurate and automatic stage (fluent stage). Students at this stage can read orally with accuracy, speed, and normal expression, as if they were speaking rather than reading from text. When reading orally from a text, they can decode and comprehend simultaneously.

Techniques for Helping Students Become Automatic Decoders

If students are asked how one becomes skilled at difficult sports such as gymnastics, figure skating, basketball, hockey, or soccer, they will likely answer that practice is an important element. Competent coaches of these sports know that to develop outstanding athletes, three essential elements of sound instruction must be implemented: motivation, proper instruction in each of the basic subskills, and extended practice. With extended practice the subskills become unitized into larger units and what started as component subskills emerge as unified holistic skilled performances. Mastering subskills is hard work, and motivation is necessary to keep the student on task long enough to master the subskills. Motivation is also necessary to keep the students focused so they can go beyond mastery to automaticity. What seems to work for developing expertise in sports also applies to developing fluent readers. Students need to be motivated to stay on task while they learn the subskills necessary for accurate decoding, and they need to be motivated to practice reading so they develop automatic decoding skills.

One way to develop automatic decoding skills is to spend a lot of time reading. There is ample evidence that one of the major differences between poor and good readers is the difference in the quantity of total time they have spent reading. Allington (1977) found that the students who needed the most practice in reading spent the least amount of time actually reading. Biemiller (1977) reported substantial ability-group differences related to how much reading was done, and Allington (1984) found in a sample of first-grade students that as little as 16 words were read in a week by one child in a low-level reading group, compared with a high of 1,933 words for a child in a high-level reading group. Nagy and Anderson (1984) showed that good readers may read 10 times as many words as poor readers in a given year.

Stanovich (1986), in his seminal article, "Matthew Effects in Reading," explained why students who start out as poor readers often remain that way. Poor readers read less than good readers, and because of the difference in time spent reading, the gap between the two groups increases each year. The rate of improvement for the good readers is far greater than the rate for the poor readers, so that the good readers leave the poor ones far behind as the students progress through the grades.

Clearly, the research literature strongly suggests that the total amount of reading done in the beginning stages has a powerful effect on the development of reading skills. Jenkins, Stein, and Wysocki (1984), for example, found that students who encountered 10 repetitions of a word while reading acquired more word knowledge than did students who encountered the same word only twice. It is obvious that as students read more, they will have more frequent encounters with commonly used words.

We have already learned that the size of the visual unit of word recognition for beginning readers is the letter, whereas for fluent readers the unit of recognition is the whole word. What happens then to the size of the visual unit of word recognition as the beginning reading student reads more and becomes increasingly familiar with words as they are encountered through reading? To answer this question, colleagues and I (Samuels, Miller, & Eisenberg, 1979) used a computer and had college students recognize real words printed in mirror image. We used mirror-image words because we wanted to increase the difficulty of recognizing the words to simulate what happens when a beginning reader encounters words time and again through reading. The mirror-image words were common animal and nonanimal words, and the students had to indicate with a button press which ones were the animal words.

Our findings demonstrated that on the first presentation of the words, they were recognized letter by letter, in a manner similar to what was found in beginning readers. But as the words became increasingly familiar through repeated exposure, the size of the visual unit increased. Throughout the study, new mirror-image words were introduced only once. These new words contained some of the same letters as in the repeated words, yet there was no evidence that there was any increase in the size of the visual unit of recognition. It appeared as if the practice effects were limited to the words practiced over and over again.

Extrapolating the findings of this experimental study to what happens in authentic reading, it appears that the benefit of lots of reading is that the student will encounter the same common words in story after story. As a result of these repeated encounters with the same words, the size of the visual unit increases with practice, until finally the entire word can be processed as a single unit. As you will recall, one of the indicators of fluent decoding is the ability to recognize words as a single visual unit and not letter by letter.

Other research evidence also shows that repeated exposures to the same words leads to improvements in fluency (Jenkins et al., 1984; Topping & Paul, 1999). Increasing the amount of reading students do is important, because as words are encountered repeatedly, there are a number of beneficial outcomes, such as improvements in word recognition, speed, ease of reading, and comprehension. One technique to increase students' exposure to words is sustained silent reading (SSR). To increase the total amount of reading that students do, teachers should follow certain principles of book selection. First, remember the goal is to increase the quantity of reading. Consequently, the books selected should be at the student's recreational level, which means that only 1 word in 20 should pose a decoding problem. Often, the students who are most in need of increasing the amount of time spent reading are the ones who tend to select books that are too hard. When students try to read books that are too hard, they become discouraged and stop reading, thus defeating the goal. Second, as much as possible, the books selected should be enjoyable. When children read enjoyable books they are motivated to read.

Having advocated extensive reading as a way to increase fluency, in fairness, I should point out that the fluency section of the NRP report (2000) neither endorses nor condemns independent silent reading. Failure to endorse independent silent reading should not be interpreted as a criticism of this technique, however. Rather, it came about because the NRP decided it would not accept correlational studies, of which there are a substantial number showing a positive relationship between various measures of reading achievement and time spent reading. The committee decided that only experimental studies would be included in their analysis, and the few experimental studies that were identified suffered from serious flaws such as failure to measure fluency or the amount of time students spent reading.

The NRP also made a distinction between two types of independent SSR situations. In one situation, nonfluent readers receive classroom instruction in the various skills required for skilled reading. In addition to classroom reading instruction, the students are encouraged to read easy, enjoyable books on their own, usually outside of school. In the second situation, nonfluent readers receive minimal skill instruction in school, and classroom time is spent in SSR. With regard to the latter situation, where nonfluent readers engage in SSR with minimal skill instruction from the teacher, the Panel was unable to find a positive relationship between those programs and improvements in achievement, including fluency. The available data suggests that SSR is not an effective practice when used as the *only* type of reading instruction, particularly with students who have not yet developed critical alphabetic and word reading skills.

Repeated Reading: A Technique for Building Fluency

Repeated reading is a technique that has students read and reread a text many times to improve reading fluency on indicators such as word recognition accuracy, reading speed, and oral reading expression. The NRP (2000) came out strongly in favor of repeated reading and similar techniques for promoting reading fluency, concluding that repeated reading procedures had a clear and positive effect on fluency at a variety of grade levels. This positive effect was found on variables such as word recognition, reading speed, and comprehension. The repeated reading studies reviewed by the Panel were conducted in a variety of classrooms, and regular classroom teachers and special education teachers frequently carried out the procedures using widely available materials. This suggests the classroom readiness of repeated reading as a method for achieving fluency for nonimpaired students at least through grade 4, and on students with a variety of reading problems from elementary school through high school.

Modern Roots of Repeated Reading

The method of repeated reading originated as independent developments at the University of Minnesota and at Harvard University to help students improve their reading. In Minnesota, David LaBerge and I (LaBerge & Samuels, 1974) had published our theory on automatic information processing in reading, but there was no practical method attached to the theory. Believing that a good theory ought to be useful, I wondered how the theory might be applied in reading, and I asked myself two important questions: "Who are the most highly trained people in our society, and how did they develop their skill?" Musicians and athletes were the answer to the first question, and repeated practice was the answer to the second. I knew that good coaches and music teachers take a complicated activity and break it into subskills. They teach the basic subskills and have their students practice them until they can be done automatically. Sometimes the subskills are practiced in isolation, and sometimes they are practiced as part of the entire skill as it must be executed in a real performance. For example, in basketball, the athlete might practice dribbling the ball by itself until the activity can be done easily. However, the dribble would also be practiced in actual games. In music, the goal might be to get the student to play the musical piece "Fur Elise" on the piano. The teacher could break the long, complicated piece into shorter sections and get the student to repeatedly practice a section at a time. Eventually, when the sections are put together, the entire piece could be played accurately, smoothly, and with expression.

When I compared the type of instruction that athletes and musicians get with what was happening in reading instruction, I realized that there are important differences. The most important difference is that for many students the pace of instruction is too fast, and every day in class is another day marked by failure. These students seldom, if ever, have a chance to perfect their reading of a passage, and when they are asked to read orally in class, they are embarrassed by their efforts. What would happen to the students who were having trouble learning to read if reading were taught in a manner similar to that used in music and sports?

The method I developed—repeated reading—was simple (Samuels, 1979). With this method, students would reread a short meaningful passage several times until a satisfactory level of fluency was reached. Fluency was defined as an 85 word per minute speed. Although accuracy in word recognition was a goal, I did not require error-free reading because I had found that students would become so fearful of making an error that it crippled their attempt to reach the speed goal. When the desired speed was reached, the procedure was repeated on the next passage in their text.

To test my idea, I worked with a classroom of mentally retarded students who were having trouble with reading. They were instructed to select easy stories that were of interest to them. Then, depending on the reading skill of the student, short selections (50–100 words) from these stories were marked off for practice. The student read the short selection to an assistant, who recorded the reading speed and number of word recognition errors on a graph. The student then returned to his or her seat and practiced reading the selection while the next student read to the assistant. When the first student's turn came again, the procedure was repeated until an 85 word per minute speed was reached. Then the student went on to the next passage.

I found that with each rereading of the passage the number of word recognition errors decreased, reading speed increased, and there was increased oral reading expression. After successfully completing one section of text, the student went on to the next section in the book. Each time a new passage from their book was started, the beginning reading rate was faster than on the first time through for the previous passage. Also, there were fewer word recognition errors. Faster reading rates and fewer errors each time a new reading section was started can be interpreted as good transfer effects. Of course, one can explain this positive transfer by the fact that there was a lot of word overlap from the previous passage to the next one. The downside of the method is that it is labor intensive, but as we shall see, the newest ways to use the method are far easier and just as effective.

At Harvard University, Carol Chomsky, the other developer of repeated reading, had friends who reported that they were having trouble teaching reading to a few students, and they asked for her help. Chomsky (1978) devised a method in which the text was recorded on a tape and the student listened to the tape recording while reading the words in the text. The tape-assisted reading was repeated until the student could read the passage without help from the tape at a rate that was the same as the tape. Neither Chomsky nor I knew of each other's work until a colleague pointed out that we were each working on a similar solution to a common problem.

The Simplified Method of Repeated Reading

Since the repeated reading method was first introduced, a number of improvements have been introduced that are designed to overcome the shortcomings of the first repeated reading programs. One shortcoming of the unassisted method I used was that it required the help of an assistant or a teacher, who listened to the student read and recorded the time and errors on a chart. A shortcoming of the assisted method used by Chomsky was that making audiotape recordings of the reading passages required considerable time and equipment. The following method, which overcomes these shortcomings, has been found to be effective and is similar to other innovations using repeated reading (Semonick, Lewis, & Samuels, 2000). The advantage of the method is that it does not require charting or computation of reading speed, nor does it require equipment. After training on how to use the method, students can conduct it by themselves with minimal help from the teacher.

The simplified method of repeated reading should be used with students who are not yet automatic at word recognition, usually first and second graders. The reading passages can be the stories found in the students' basal readers. The students work on their own in pairs, if possible a better reader with a poorer reader. For each reading of the text passage, the students take turns: One member of the pair takes the role of student, while the other takes the role of teacher. The student's role is to read the passage orally and the teacher's role is to listen to the oral reading while looking at the words in the text. Thus, both students are getting practice with the passage. After the passage is read the first time, the students reverse roles. Each passage is read only four times, because research by O'Shea, Sindelar, and O'Shea (1985) has shown that most of the gains in reading speed, word recognition error reduction, and expression in oral reading are acquired by the fourth reading. They concluded that, "Four readings appear to be optimal since, after four readings, 83% of the fluency increase between one and seven readings is achieved" (p. 138). By reading the passage four times and not having to record speed and accuracy on a chart, the method is simplified while maintaining the beneficial effects.

The classroom teacher has several important tasks to perform with this simplified form of repeated reading. Before the simplified method is introduced, the teacher should ask the students how one becomes skilled at sports. Most students know that it is through practice that one gains skill in sports, and they will say so. The teacher should state that one becomes a skilled reader in the same way that one becomes skilled at sports and that students will be learning how to use a new method called repeated reading that will help them to become good readers. Our observational data shows that in the first few sessions of the simplified repeated reading method, considerable teacher guidance and help was required. After a few sessions, however, the students became familiar with the method and were able to work with minimal help from the teacher.

Each daily session with repeated reading follows the sequence described here: The teacher reads the new passage to the class while the students read the passage silently. After the teacher has read the passage to the students, the students work in pairs and take turns reading the passage to each other. Prior oral reading of the text by the classroom teacher before the students read it by themselves familiarizes them with the words and concepts in the passage, duplicating in large measure what is done in the tape-assisted method.

What Research Has to Say About Repeated Reading

In the two decades since the method was first introduced, more than 100 studies have been published that have tested the repeated reading method. A consistent finding from these studies is that repeated reading practice produces statistically significant improvement in reading speed, word recognition, and oral reading expression on the practiced passages (Kuhn & Stahl, 2000; Stahl, Heubach, & Cramond, 1997). The ability to read orally like a skilled reader after a few rereadings of a text is an important accomplishment and confidence builder for nonfluent readers, who are often embarrassed by their poor oral reading skills. Herman (1985); Su, Samuels, and Flom (1999); and Dohower (1987) have found that a useful indicator of fluency is the ability to read a passage with expression. In a comparison of assisted and unassisted repeated reading, Rasinski (1990) found no difference between the methods. Sindelar, Monda, and O'Shea (1990) also reported that each rereading led to greater gains in comprehension and recall.

Although it is satisfying to get such good results on the practiced passages, a more critical test of the value of repeated reading is how the students do on a transfer passage that is not the same as the ones that were practiced. The findings indicate that the extent of transfer depends on the number of words found in common between the practiced and the transfer passages (Rashotte & Torgesen, 1985). If there is substantial overlap in the words, there is good transfer, but if the amount of overlap is minimal, transfer is not as good. If word overlap between the practiced passage and the transfer passage is such an important factor influencing transfer, what would happen if all the words in a story were practiced in isolation, and then the words were reassembled to form a coherent story? Fleisher et al. (1979) did this and found that transfer was not as good as one might wish. Apparently, word recognition is a necessary but not a sufficient condition for reading a new story. The linguist Schreiber (1987) suggested what is missing from isolated word recognition practice. He claimed that spoken language with its intonation, pauses, pitch variations, and emphasis carries important information that facilitates comprehension, but written language does not do a good job of representing this information. If students practice recognition of words in isolation, they are missing out on an essential link in the fluent reading chain. Part of the job of learning to read with understanding is learning how to provide the missing links in the written code, and this can only come through reading coherent text.

Although Fleisher et al. (1979) failed to find transfer effects from single-word training to reading in context, Levy, Abello, and Lysynchuk (1997) used a different method for building single-word fluency. They did get positive transfer to reading in context, and in addition, they reported positive comprehension effects as a result of the training.

How Can Teachers Determine When a Student Is Fluent?

Although there are a number of indicators that can help classroom teachers determine if a student is a fluent reader, the tests are not standardized. Consequently, teachers have to use a combination of "soft signs" such as reading speed, word recognition errors, and lack of expression in oral reading to make a determination. To assess fluency, teachers should select two passages at the student's estimated reading level, using passages that are on topics unfamiliar to the student. The length of the passages should be approximately the same, ranging from a half page to two pages. One passage is used to test listening comprehension, and the other passage is used to assess the student's reading comprehension. The student should not be permitted to preread or practice either passage.

With the listening passage, the student is told to listen to the teacher read and then questions will be asked. The teacher then reads the passage to the student while the student listens, and immediately afterward the student is asked comprehension questions. The purpose of this test is to determine the student's ability to comprehend when decoding is not required. The second passage is the reading test. Instructions for this test are as follows: "Read this out loud to me. As soon as you are done, I want you to tell me everything that you can remember." Earlier in this chapter I stated that the critical test of fluency is the ability to decode a text and comprehend it at the same time, and in this informal reading test the student is required to do just that. For students who are not decoding automatically, this task will be extremely difficult to perform well, assuming the student has little prior knowledge of the text topic. For both the listening and the reading test, the teacher should observe the degree to which the student can recall details as well as general overall characteristics of the text. If the student omits passage details in the recall, the teacher can ask specific questions. During the oral reading, the teacher should record the following information: oral word recognition errors, word-per-minute rate, estimate of oral reading expression, and student's comprehension.

With the information from this informal test, the teacher can make some informed decisions. For example, if the student's listening comprehension is far better than his or her reading comprehension; if the rate of oral reading is slow (below 60 words a minute), with more than one word recognition error for every 10 words; and if the oral reading had poor expression, there is a high probability that the student is not automatic at word recognition, and a need for remedial work including more time spent reading recreational level books as well as repeated reading is indicated.

Questions for Discussion

1. When people read, they want to understand what they read. Explain why automaticity in decoding (fluency) is necessary for good comprehension.
2. As superintendent of schools, you have decided to take a comprehensive approach to the problem of helping all the students in your school system become skilled readers. If there were only one thing that you could do to achieve this goal, what would you do? Is there any research to support your plan, and if so, what does the research seem to say?
3. A student in your classroom has poor comprehension when reading silently. List all the factors that may be contributing to the student's poor comprehension. What methods could you use to determine if lack of fluency is one of the contributing factors? What methods are available for overcoming lack of fluency?

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Chapter 9

Making a Difference in Adolescents' School Lives: Visible and Invisible Aspects of Content Area Reading

Richard T. Vacca

Content area reading has the potential to play an important role in the school lives of adolescents. A credible knowledge base, grounded in theory and research on the relationships between reading and learning, supports the *visible* and *invisible* dimensions of content area reading instruction. The visible aspects of content area reading emphasize the explicit development of reading strategies that enable students to think and learn with texts. There is a convincing body of research that supports the role of strategic learning in students' literacy development (Pressley, 2000). Strategy instruction in content areas is visible in the sense that teachers engage in explicit instructional routines to develop students' metacognition of reading strategies and the self-regulated use of these strategies to comprehend and learn from texts.

As crucial as strategy instruction may be to adolescents' literacy development, an equally important dimension of content area reading is its invisibility across the curriculum. Just as metaphysical concepts of "soul" are invisible to physical concepts of "body," so should the use of reading strategies be an invisible dynamic underlying subject matter learning. Content area reading is a matter of good teaching. When the invisible aspects of content area reading are operating in the classroom, the teacher is able to integrate reading and subject matter learning in seamless fashion, using language and literacy to scaffold students' learning.

Despite the potential of content area reading to make a difference in the school lives of adolescents, the public discourse over literacy has focused primarily on the literacy learning of young children. One of the assumptions underlying early literacy policy is that once children learn to read, they will be able to use reading to learn for the rest of their lives. From a developmental perspective, such an assumption is faulty. The literacy learning that takes place in adolescents between the ages of 10 and 18 is of critical importance in preparing for life in and out of school. The Commission on Adolescent Literacy of the International Reading Association asserts,

> Adolescents entering the adult world in the 21st century will read and write more than at any other time in human history. They will need advanced levels of literacy to perform their jobs, run their households, act as citizens, and conduct their personal lives. They will need literacy to cope with the flood of information they will find everywhere they turn. They will need literacy to feed their imaginations so they can create the world of the future. In a complex and sometimes even dangerous world, their ability to read will be crucial. Continual instruction beyond the early grades is needed. (Moore, Bean, Birdyshaw, & Rycik, 1999, p. 3)

Yet, the renewed debate on "phonics versus whole language" played out in the media and embraced by politicians has resulted in policy-driven proposals for increased research and development for early literacy. Although the funding of research and development programs for early literacy is critical, what is the implicit message that is being signaled? As a colleague noted, "While I support literacy dollars being spent on younger children, I am disappointed that adolescents are now moved out of the picture—sidelined, so to speak" (Vacca, 1997, p. 3).

The controversy regarding how young children learn to read and write serves only to magnify the lack of attention and commitment given to adolescent learners and their literacy needs. Given today's politically charged educational arena, the potential to marginalize the development of older literacy learners is greater now than at any time in the past century. Yet as a society, we can ill afford to marginalize adolescent literacy, pushing it to the edges of public debate and policy, at a time when the literacy development of young adolescents and teenagers is more critical than ever (Vacca, 1998).

The International Reading Association created the Commission on Adolescent Literacy to rekindle a professional conversation on literacy teaching and learning in middle and high schools. The possibilities for literacy use and text learning in school and nonschool contexts are unprecedented in adolescents' lives. Technological advances, brought on by the digital forces of the computer, are changing the face of communication and the dissemination of information. Highly interactive and engaging electronic texts are transforming the way people think about literacy

(Reinking, 1995). In addition, a healthy resurgence of print media has resulted in the proliferation of fiction and nonfiction books for adolescents about every topic imaginable. Moreover, definitions of what constitutes a text have been broadened. Literate activity in adolescents' lives is no longer limited by conventional notions of texts (Neilsen, 1998). Texts represent sets of potential meanings and signifying practices, whether the text is a novel in English class, the instructional conversation that takes place about the novel, or the made-for-television movie based on the novel. Continued literacy development is of critical importance because it helps to shape the core strategies by which adolescents learn to negotiate meaning and think critically about the texts in their lives, whether in the context of school or the world outside of school.

Content area reading in middle and high school can make a difference in the literate lives of adolescents. William S. Gray, preeminent among first generation reading educators and researchers, often is credited with having fashioned the movement toward reading and studying in content subjects. In the *Twenty-Fourth Yearbook of the National Society for the Study of Education (NSSE), Part One* (Whipple, 1925), Gray articulated the relationship between reading and learning that remains today the underlying rationale for content area reading instruction. He contended that reading

> is essential in every content subject.... In fact, rapid progress in these subjects depends in a large degree on the ability of pupils to read independently and intelligently. It follows that good teaching must provide for the improvement and refinement of the reading, attitudes, habits, and skills that are needed in all school activities involving reading. (pp. 1–2)

Not only is Gray credited with having forged the beginnings of content area reading, but he also is associated with what has become an often used, often confused mantra in education: "Every teacher is a teacher of reading."

Although the rationale for content area reading is as relevant today as it was in Gray's era, there is ample evidence indicating that content area reading practices do not easily find their way into subject matter classrooms in middle and high schools, despite the attention given it by literacy researchers and educators. Most content area teachers see their primary responsibility as preparing young adolescents and teenagers in their subject area for high school and college, and they have difficulty accepting that they should have some responsibility for adolescents' reading development. The saying, "Every teacher is a teacher of reading," did not resonate well with content area teachers in Gray's time, and it is not greeted with enthusiasm among today's content area teachers, either. Often forces within the culture and organization of schools work against the use of content area reading practices and exert enormous influence on the way content area teachers view their roles, think about instruction, and resist the use of content area reading practices (Ratekin, Simpson, Alvermann, & Dishner, 1985). The irony of their resistance toward reading is that content area teachers genuinely *value* the role that reading plays in learning, but fail to *attend* to reading in their own practices (O'Brien & Stewart, 1992). As a result, the responsibility for teaching reading usually rests with English/language arts teachers and reading specialists—and although they have important roles to play in adolescent's literacy development, English/language arts teachers and reading specialists cannot go it alone. The responsibility for teaching reading is a shared one, belonging to all teachers in all subjects.

Although content area teachers in most states are required to take a course on content area reading for licensure and certification, an initial course, although necessary, is not enough to sustain teachers' long-term use of literacy practices across the curriculum. To overcome cultural and organizational forces that contribute to content area teachers' resistance of reading practices, schools must provide classroom teachers with reading specialist services, including resource support, current research on reading and learning, and ongoing staff development through self-study, teacher inquiry projects, and action research in the various content areas that make up middle and high school curricula (Vacca & Alvermann, 1998).

The statement "Every teacher is a teacher of reading" need not cause confusion or misinterpretation. In retrospect, it may have sufficed to have simply said, "Every teacher is a teacher." The historical context that follows will help to clarify differences between visible and invisible aspects of content area reading and the role of teachers who use literacy strategies in content learning situations.

Evolution of Content Area Reading: A Historical Context

In their historical perspective on the beginnings of content area reading, Dishner and Olson (1989) suggest that the relationship between reading and learning is one of the most researched and discussed aspects of the reading field. Historical researchers, in fact, trace the roots of content area reading to the early 1900s (Moore, Readence, & Rickelman, 1983). In the past century, three major paradigms have contributed to the traditions and practices associated with content area reading instruction: the reading and study skills paradigm, the cognition and learning paradigm, and the social constructivist paradigm.

Reading and Study Skills Paradigm

From the early 1900s through the 1960s, the predominant paradigm for content area reading was skills based. Reading scholars and researchers recognized the relationships between reading and learning and essentially pursued two lines of inquiry through descriptive, correlational, and experimental research: (1) the identification of reading and study skills associated with each of the content areas, and (2) the effects of various instructional variables on the acquisition of reading and study skills and learning in content areas.

Gray (1925) conducted one of the first studies to identify reading and study skills by content area. He surveyed 250 teachers in grades 4, 5, and 6 to determine the uses of reading that occurred in different content areas. In literature, for example, Gray concluded that students read to get the central point; to determine the sequence of events; to remember and reproduce the plot of a story; to secure pictures from descriptions, expositions, and characterizations; to determine people's motives; and to form ideals by reading of the lives of others (p. 16). These uses of reading suggested the reading and study skills that were presumed to be unique to literature and that differed from the reading and study skills necessary to read other content areas such as history, geography, or arithmetic.

Gray's work prompted other reading researchers to analyze the skills needed to read effectively in content areas. McCallister (1930) used qualitative research methods, including observation and interviews, to identify the types of reading skills and activities in various content areas. He reported that students enrolled in junior high subjects had to perform numerous kinds of reading activities depending on the nature of the subject matter and the teaching strategies appropriate to a particular subject area. Other researchers compared students' performance on general tests of reading with performance on content-specific achievement tests. Artley (1944), for example, studied the relationship between general reading comprehension and reading comprehension factors specific to social studies. He found that the ability to read generally is related to the ability to read social studies, but an absence of a near perfect correlation indicated a "high degree of specificity" in the factors associated with reading comprehension in a content area such as social studies. Numerous other studies also have correlated scores on various types of reading and content area achievement tests. For the most part, investigators concluded that there are skills common to different subject areas, but some of these skills hold special relationships to achievement in each of the subject areas.

In addition to the identification of reading and study skills in various content areas, a recurring issue related to the reading and study skills paradigm—locus of instruction—dominated the research on content area reading (Moore et al., 1983). Locus of instruction refers to the configuration of instructional variables affecting reading and subject matter learning, that is, the appropriate teacher to deliver reading skills (reading teacher or content teacher); the appropriate location where instruction takes place (reading classroom or content classroom); and the appropriate instructional material (general reading materials or subject matter textbooks). As a result, reading researchers studied the effects of teaching reading and study skills from two fundamentally different instructional approaches: (1) a "direct" instructional approach, in which the teaching of reading and study skills is separate from the content classroom, based on the assumption of transfer to content areas; and (2) a "functional" instructional approach, in which the teaching of reading is embedded within the context of content learning using content course materials. A functional approach is based on the assumption that content area teachers best facilitate reading in authentic learning situations.

Transfer studies were popular within the reading and study skills paradigm and produced varied findings. For example, Simpson (1929) investigated the transfer effects of specific training in answering questions about, evaluating, outlining, and summarizing historical materials on the ability of intermediate grade students to retain specific historical information and to read historical materials. Although the experimental group significantly outperformed the control group on a composite history reading test, there were no differences between the two groups in their ability to retain historical facts. Conversely, Salisbury (1934) studied the transfer effects of training in logical organization (outlining and summarizing) among students in seventh, ninth, and twelfth grades. She found that such training resulted in significant improvement in reading and reasoning. When taught with general materials, instruction in logical organization transferred to specific study situations and improved learning in content subjects.

Studies that attempted to teach reading and study skills within the structure of the content area were also popular. Leggitt (1934) was one of the first reading researchers to integrate lessons providing practice in reading and study skills with course content. The lessons were designed to help students study a ninth-grade course in U.S. government. Leggitt concluded that students increase their facility with "working skills" when they practice those skills in conjunction with appropriate subject matter rather than in isolated lessons. Many other researchers in the 1940s, 1950s, and 1960s designed "content-centered" studies to investigate the effects of combining reading with content learning. In 1964, for example, Herber developed "guide materials" to assist high school physics students in the development of essential concepts from their text. He matched two groups on the basis of ability and reading test scores. The experimental group received study guides to direct their reading of the text material, and the control group received an unmodified unit of instruction. Students in the experimental group significantly outperformed those in the control group on a standardized assessment of the content under study.

Herber, director of the Reading Research Center at Syracuse University, wrote the first textbook exclusively devoted to content area reading instruction, *Teaching Reading in Content Areas* (1970). In his book, Herber theorized that skills taught in reading classes are applicable to content materials, but students must adapt the skills to meet the peculiarities of each subject they study. Research in reading in content areas conducted at the Reading Research Center, funded by a grant from the U.S. Office of Education, investigated instructional procedures designed to guide reading and learning. These procedures, grounded in cognitive learning theory, supported a functional approach to content area reading. For nearly two decades, Herber and his research associates engaged in an iterative research process designed to refine and validate promising instructional strategies and to lend empirical support to a functional concept of content area reading instruction (Herber & Barron, 1973; Herber & Riley, 1979; Herber & Sanders, 1969; Herber & Vacca, 1977). Many of the studies drew heavily from the work of cognitive and instructional psychologists, including Ausubel (1968), Berlyne (1965), Bruner (1970), Frase (1971), and Rothkopf (1966), as a shift from a skills paradigm to a cognitive paradigm became noticeable in the reading field. From these studies evolved an emphasis on learning from text through the use of strategies such as graphic organizers

(Barron, 1972; Earle, 1969), anticipation guides (Shablak, 1972), question-generation strategies (Smith, 1977), and various types of guide materials related to text structure (Vacca, 1973); reader response (Sanders, 1970); and the conceptual organization inherent in informational text (Baker, 1972).

Cognition and Learning Paradigm

The shift from a reading and study skills paradigm to a cognition and learning paradigm became noticeable in the reading field in the 1970s and 1980s with numerous investigations conducted to better understand the role of cognitive and metacognitive processes in reading and to validate learning strategies grounded in cognitive and metacognitive principles. Reading research throughout the United States became increasingly multidisciplinary. It resulted in an era of unprecedented advances in theory and model building, leading to a renaissance in research on learning from text. Researchers working for the most part within their own disciplines of cognitive and instructional psychology, psycholinguistics, sociolinguistics, and reading education took aim on the reading process, with comprehension the bull's-eye. Today, reading research continues to be grounded solidly in cognitive learning theory, although some might argue that a social constructivist paradigmatic shift currently is underway (Bean, 2000).

Within the cognition and learning paradigm, research related to schema theory, text structure, metacognition, and strategic learning has had a major impact on content area reading practices. According to a schema theoretic view, readers are in a better position to comprehend what they are reading whenever they use prior knowledge (schemata) to construct meaning. Schemata reflect the experiences, conceptual understanding, attitudes, values, and skills a reader brings to a text situation. Schemata have been called the building blocks of cognition (Rumelhart, 1982) and a cognitive map to the world (Neisser, 1976) because they represent elaborate knowledge networks that we use to make sense of new stimuli and situations. Schema activation is the mechanism by which readers access what they know and match it to the information in a text. For comprehension to occur, the reader must activate or build a schema that fits with information encountered in a text. When a good match occurs, a schema allows the reader to organize text information more efficiently, make inferences and fill in knowledge gaps in a text, and elaborate on the material.

Text structure, like schema, is an important variable in reading comprehension. Cognitive researchers have shown that text structure is crucial to learning and memory (Kintsch, 1977; Meyer & Rice, 1984). The skilled reader searches for the structure of idea relationships that are hierarchically arranged in informational text and can readily differentiate important ideas from less important ideas in the material (Meyer, Brandt, & Bluth, 1980; Taylor, 1980). Various text patterns have been identified that represent the different types of logical connections among ideas organized in informational text (Meyer, 1975).

Metacognition involves the ability to control one's own cognitive activities (Brown, Bransford, Ferrara, & Campione, 1983). Metacognitive ability and strategic learning are closely related. Good readers are strategic readers. They are metacognitively aware, knowledgeable about their own reading processes, and in control of reading activities. Strategic learners have developed a repertoire of strategies they use to make sense of text during reading. They know what, how, when, and why it is important to monitor what they are reading, and they know how to regulate their use of comprehension strategies.

Applied to reading, metacognitive and strategic learning variables include *self-knowledge* (the knowledge readers have about themselves as readers and learners); *task knowledge* (the knowledge readers have about reading tasks and the strategies that are appropriate to a task at hand); and *self-monitoring and regulation* (the ability of readers to keep track of how well they are comprehending and to use strategies when comprehension problems arise). Metacognitive ability and strategic learning are related to both age and reading experience (Stewart & Tei, 1983). Older students, for example, are more strategic in their reading than younger students, and good readers are more likely to use metacognitive processes to self-regulate their use of comprehension strategies to make sense of text than less proficient readers.

The research related to schema theory, text structure, metacognition, and strategic learning influenced the development and validation of individual comprehension strategies (e.g., prior knowledge activation, question generation, cognitive mapping, graphic organizers, guided imagery, text patterns) and instructional frameworks for comprehension (e.g., reciprocal teaching, K-W-L, guided reading procedure) that have worked their way into the fabric of content area reading instruction (Vacca & Vacca, 1999). In the 1990s, what Bean (2000) describes as social constructivist dimensions influenced content area reading practices.

Bean notes a shift away from the validation of teaching and learning strategies to an emphasis on understanding the sociocultural underpinnings of teaching and learning in content classrooms.

Social Constructivist Paradigm

Constructivists, such as Piaget, theorize that learners construct knowledge from inside their minds. Young children, for example, do not internalize knowledge directly from the outside world, but construct it in interaction with their environment (Kamii, 1991). In a social constructivist paradigm, the experiences and views of students and teachers within a classroom environment are at the forefront of learning and teaching in content classrooms. Knowledge is not dispensed from teacher to students or from text to students, but is always under construction. The social context of the classroom affects the way students interact with the teacher, the text, and with one another.

Social constructivist research is interested in such issues as the beliefs of students and teachers toward teaching and learning (Lloyd, 1996; Moje, 1996), the role of literature in content study (Bean, 1998), and the connections between reading and talking to learn as well as reading and writing to learn (Newell, 1984; Rubin, 1990). Teachers who hold constructivist beliefs recognize that students learn *with* text, not necessarily *from* text. The expression "learning from text" is rooted in a cognitive tradition and suggests that the flow of meaning is from text to reader. Learning with text extends cognitive notions of text learning. It suggests that a transaction takes place between the reader and the text, rather than a simple transmission of knowledge from text to reader. Students have much to contribute to their own learning as they negotiate meaning and socially construct knowledge through learning situations that require discussion and writing.

Teachers make a difference in the school lives of students when they put into practice the visible and invisible aspects of content area reading. The historical context just explored suggests the importance of both explicit and implicit use of instructional strategies in content area classrooms.

Visible Aspects of Content Area Reading

Since the earliest days of the content area reading movement, much value has been placed on a direct instructional approach to instruction in reading skills and strategies. There are strong traditions in the reading field that underscore the importance of teaching students how to read and study effectively, regardless of whether a content area teacher or a reading teacher inside or outside of content area learning situations orchestrates the direct instruction. When teachers are explicit in the teaching of skills and strategies for text learning, instruction is visible.

The cognition and learning paradigm supplanted the reading and study skills paradigm in the late 1960s and 1970s because of the atheoretic underpinnings of reading and study skills instruction. Without a theoretical framework to guide curricular and instructional matters, any "skills program" counted as effective reading instruction for adolescents. In the 1960s and 1970s, visibility in the direct teaching of reading was often reduced to a reading lab for the most deficient readers in a junior high or high school. Reading labs were stocked with expensive but visible equipment, tachistoscopes, controlled readers, and skill-and-drill workbooks. These instructional artifacts formed the core of visible instruction.

In schools where reading and study skills were taught in reading classes, or for that matter, in content classes, students were apt to be exposed to "blind" instruction. In blind instructional situations, students are taught reading and study skills through inordinate amounts of practice on paper-and-pencil tasks or are given a set of procedures to follow, but this is where instruction usually ends for most students. For example, directed to make use of a set of procedures for studying text, such as SQ3R (Survey, Question, Read, Recite, Review), many students failed to grasp the rationale for SQ3R and attempted to use it with little basis for evaluating its success or monitoring its effectiveness. As a result, they may have practiced SQ3R in reading classes, but saw little need to apply the study system in content area courses.

Alternatives to blind instruction, emerging from the research on cognitive and metacognitive processes in reading comprehension, now form the core of visible, explicit instruction in the use of reading strategies to comprehend text. Strategy instruction is not blind, but informed by theory and research. Pearson (1982) asserts that strategy instruction helps students develop strategies for self-regulated, independent use to cope with the kinds of comprehension tasks that they are asked to solve in their school lives.

Content area teachers can make a difference in the school lives of adolescents when they incorporate reading strategy minilessons into their instructional repertoire. Explicit instruction in the development and use of reading strategies requires explanation, modeling, practice, and application:

- Direct explanation of the strategy. Through direct explanation of a strategy, students become more aware of *what* the strategy is, *how* to use it, *why* it is important to use, and *when* it should be used. Students not only learn the rules and procedures behind the use of a reading strategy, but also develop a rationale for its use. During the direct explanation phase of strategy instruction, a give-and-take exchange occurs between the teacher and students. Why is the strategy useful? What is the payoff for students? How does it improve learning?
- Demonstration of the strategy. Once students understand the rules and procedures associated with a reading strategy, provisions are made in the minilesson to model the use of the strategy through think-alouds (Davey, 1983). Think-alouds allow the teacher to share with students the thinking processes he or she uses in applying the strategy, stopping at key points to ask questions, provide prompts, or both. These questions and prompts mirror the thinking required to use the strategy effectively.
- Strategy practice. As part of the minilesson, the teacher provides students with an easy text or two to practice the strategy and to discuss students' use of it.
- Strategy application. Once students have had some practice with the use of a strategy, regular class assignments should encourage its application. Rather than assign for homework a text accompanied by questions, frame the assignment so that students will have to apply the strategy they have learned.

Explicit instruction through minilessons creates a framework that makes visible the instructional scaffolding that adolescents need to develop control over reading strategies.

Invisible Aspects of Content Area Reading

A functional concept of content area reading became popular in the 1970s. Because functional instruction in content areas integrates the application of comprehension strategies and content acquisition, content area teachers will not find that they are sacrificing an inordinate amount of instructional time to the teaching of reading. All too often in middle and secondary schools, the visible reading program is the only effort that schools make to incorporate strategy use in content areas. However, visible instruction diminishes in effect if it does not support and serve the more functional, invisible dimensions of content area reading.

Teachers make content area reading invisible through the design of well-planned content literacy lessons. Often these lessons are referred to as the teacher's *instructional framework* (Vacca & Vacca, 1999). Essentially, there are three points in an instructional framework at which students can use reading strategies for comprehension: (1) before reading, (2) during reading, and (3) after reading text assignments. For example, before students take on a text, there are things that they can do that will prepare them for the ideas that they will encounter when they begin reading. Preparing students may circumvent some of the ineffective habits that they may have developed as readers. Content area teachers scaffold before reading experiences using a variety of cognitive and metacognitive strategies, including encouraging students to analyze the reading task that is ahead of them by asking questions such as, What is my primary reason or purpose for reading the text assignment? Should I try to remember details or read for the main ideas only? How much time will I spend on the reading? What do I already know about the topic?, and What will I need to find out more about? In addition, the teacher might consider scaffolding prereading experiences that engage students in thinking about ideas before they are encountered in text through brainstorming, generating questions, making predictions, studying pictures and graphics, and surveying titles and subheads. For example, making predictions about the material will help students actively focus on ideas encountered during reading. Were their predictions accurate? Did they need to modify them once they started reading? Or did students abandon them altogether in favor of new ideas?

Strategic learning during reading is all about monitoring reading and making sense. Skilled readers know how to monitor and keep track of whether the author is making sense by asking questions such as, What is the author trying to say here? What does the author mean? So what? What is the significance of the author's message? Does this make sense with what the author told us before? Does the author explain this clearly? These queries are designed to help students to question the author and to understand that text material needs to be challenged—"taken on"—as one might challenge a friend in a debate or conversation. Using an instructional strategy such as Questioning the Author (QtA), teachers model for students how to ask questions while reading to construct meaning and to better understand the author's intent (Beck, McKeown, Hamilton, & Kucan, 1997). Successful readers act on the author's message. They raise questions or challenge what the author is saying if what they are reading does not make sense to them. The QtA strategy allows students to think more deeply about segments of text during reading. The strategy places value on the quality and depth of students' interactions with text and their responses to the author's intended meaning. The QtA strategy also shows students how to read text closely, as if the author were there to be challenged and questioned. Content area teachers can also show students how to look for organization in everything they read. As students read, teachers can provide activities such as graphic organizers to guide them in their search for the different patterns of organization, such as cause-effect, comparison-contrast, problem-solution, sequence, and main idea-detail (Jones, Pierce, & Hunter, 1988/1989).

After reading, comprehension strategies can be used to extend and elaborate on the ideas encountered during reading. This phase of the instructional framework is an opportunity for students to "go public" with what they have learned from reading. It is a time to share their best thinking about the author's message, either through discussion with other students, through writing in response to what they have read, or through some other means of expression that gets at the meaning of the author's message. What is the significance of what students have read? Do they agree or disagree with the author? How does the author's message make them feel? Did the author's message help to solve a problem or look at an issue or event from a different perspective? How teachers connect content learning to language processes contributes greatly to students' comprehension of text. Talking and writing to learn can be a springboard into reading, and reading can be the basis for talking and writing.

Teachers who make talk visible in their classrooms recognize the limitations of recitation and seek alternative forms of postreading classroom discussion. They recognize that students need opportunities to talk spontaneously and to respond personally and critically to ideas they are encountering in text. The Socratic seminar is an alternative to recitation and serves as an after-reading discussion strategy. The instructional goal of a Socratic seminar is to revolve discussion around students' talk as a medium for socially constructing knowledge (Tanner & Cassados, 1998). Socratic seminars are named as a tribute to Socrates, the ancient Greek philosopher, who believed that people learned more effectively through self-discovery than through being told the "correct" answer or interpretation. The teacher's role is to guide learners to discovery through the artful use of questions. Socratic seminars, therefore, are designed around core questions that lead to thoughtful discussions in which students engage in reasoning, predicting, projecting, and imagining.

A Socratic seminar can vary in its format and delivery, depending on the purpose for discussion. Tanner and Cassados (1998) provide general guidelines for facilitating the seminar using an "inner circle/outer circle" framework:

- Analyze the content of the text selection to be discussed. Familiarize yourself with the major concepts, insights, vocabulary, text cues, and features to which you want students to pay attention.
- Prepare a set of discussion questions that raise issues, probe, apply, and synthesize information. Also prepare metacognitive questions for use during the debriefing session such as, Did we learn a useful strategy? What was confusing in this reading? What was useful? What did you learn about________from reading? (e.g., What did you learn about doing math from this reading?)
- Arrange the room for a seminar by creating an inner circle (for the discussants) and an outer circle (for the note takers). Within the inner circle, designate one seat as the "hot seat." When a student wants to speak, he or she sits in the hot seat. (You may consider phasing out the hot seat once students become accustomed to talking within the inner circle.)
- Set 15 to 30 minutes for discussion and begin with a core question.
- End the discussion with a summary statement or invite a student(s) from the inner or outer circle to summarize the discussion.
- Conduct a 5- to 10-minute debriefing session to improve the quality of the discussion. Focus on the process underlying the seminar. Invite students to make suggestions for improving the seminar format. Ask the types of metacognitive questions suggested previously.
- Serve as the discussion leader by helping students to reconstruct the author's meaning and to construct their own meaning. Start the discussion with a question that raises an issue.

There are also guidelines for the students to follow:

- Focus on the content of the text selection.
- Listen to one another.

- Outer circle students take notes on the discussion.
- Inner circle students speak clearly to one another.

The use of discussion strategies such as the Socratic seminar results in a response-centered classroom that values and fosters the student's personal reaction to ideas encountered in texts. Writing-to-learn strategies, like talking-to-learn strategies, lend to the invisibility of content area reading as well. When students "think on paper" to express thoughts, feelings, and opinions, they are more likely to respond to and explore ideas encountered in text. Students write more and think more when they engage in *low-stakes* writing assignments (Elbow, 1997). Low-stakes writing tasks allow students to use writing to interact personally with ideas and information without the pressure of producing polished, finished products. Teachers assign writing not to have students produce excellent pieces of writing, but to get students to explore ways of making sense of text material. Low-stakes writing assignments need to be read but not necessarily graded by teachers for content, organization, or mechanics. Teachers should not expend energy on students' errors but should attend to the role that writing plays in helping students to become more knowledgeable and conversant with the texts being studied.

Depending on the teacher's instructional objectives, students might engage in various low-stakes writing assignments to think about and interact with ideas and information being studied. Writing in learning logs, double-entry journals, or response journals allows students to use language to interact personally with ideas and information encountered in course material, class lectures, and discussions. Journals may be used regularly to create a visible, permanent record of what students are thinking and learning throughout the school year. Journals can be used in the beginning, middle, or end of class lessons to generate ideas, to write down predictions about topics to be studied, to record thoughts and feelings in response to what students are reading, or to explore concerns as students respond to questions such as the following: What did I like or dislike about class today? What did I understand about today's classwork? What is not clear about the ideas presented in today's class?

In addition, specific writing-to-learn strategies help students to focus on information encountered in text beyond a level of recall. Many possibilities exist for informal writing activities. For example, the use of a quickwrite allows students to write freely and quickly for a short period of time in response to a question. Point-of-view prompts require students to write from different perspectives or stances, for example, "You are about to be interviewed as if you are a river turtle living in a river community along the west coast of Florida. As a young river turtle, what is your typical day like?" (Vacca, 2000).

Conclusion

The visible and invisible dimensions of content area reading can make a difference in the school lives of adolescents. Showing students how to use reading strategies and language processes to learn in the content classroom does not require specialized training, nor does the development of reading strategies diminish the content area teacher's role as a subject matter specialist. To the extent that texts are an integral part of content studies, teachers have a direct and functional role to play in adolescents' literacy development. On a practical, day-to-day basis, teachers need to reflect on the strategies their students need to be successful in academic subjects.

Questions for Discussion

1. You are asked by your school principal to make a presentation to your district's board of education on the importance of continued literacy development in adolescence. Your presentation addresses two key questions: Why is adolescent literacy more critical than ever? What should an ideal literacy program look like in middle, junior high, and high schools? Think about these two questions as you prepare the presentation to the board. What will be your main talking points?
2. Explicit strategy instruction is highly visible in the classroom. Imagine that several members from the community are visiting your classroom. During the classroom observation, the principal of your school proudly points out to the visitors that you do an expert job developing reading strategies. Afterward, you meet with the visitors and discuss what constitutes visible instruction in the development of reading strategies. What do you tell the visitors?
3. Suppose you are the reading specialist in your school. You are invited to speak to the content area instructional staff at a faculty meeting on why it is important to make content area reading an invisible part of the curriculum. How do you explain the concept of

invisibility as it applies to content literacy? Explain why and how a strategy such as the Socratic seminar connects literacy and learning in a seamless fashion.

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Chapter 10

Effective Practices for Developing Reading Comprehension

Nell K. Duke and P. David Pearson

Reading comprehension research has a long and rich history. There is much that we can say about both the nature of reading comprehension as a process and about effective reading comprehension instruction. Most of what we know has been learned since 1975. Why have we been able to make so much progress so fast? We believe that part of the reason behind this steep learning curve has been the lack of controversy about teaching comprehension. Unlike decoding, oral reading, and reading readiness, those who study reading comprehension instruction have avoided much of the acrimony characteristic of work in other aspects of reading.

As it should be, much work on the process of reading comprehension has been grounded in studies of good readers. We know a great deal about what good readers do when they read:

- Good readers are *active* readers.
- From the outset they have clear *goals* in mind for their reading. They constantly *evaluate* whether the text, and their reading of it, is meeting their goals.
- Good readers typically *look over* the text before they read, noting such things as the *structure* of the text and text sections that might be most relevant to their reading goals.
- As they read, good readers frequently *make predictions* about what is to come.
- They read *selectively*, continually making decisions about their reading—what to read carefully, what to read quickly, what not to read, what to reread, and so on.
- Good readers *construct, revise, and question* the meanings they make as they read.

- Good readers try to determine the meaning of *unfamiliar words and concepts* in the text, and they deal with inconsistencies or gaps as needed.
- They draw from, compare, and *integrate their prior knowledge* with material in the text.
- They think about the *authors* of the text, their style, beliefs, intentions, historical milieu, and so on.
- They *monitor their understanding* of the text, making adjustments in their reading as necessary.
- They *evaluate the text's quality and value,* and react to the text in a range of ways, both intellectually and emotionally.
- Good readers *read different kinds of text differently.*
- When reading narrative, good readers attend closely to the setting and characters.
- When reading expository text, these readers frequently construct and revise summaries of what they have read.
- For good readers, text processing occurs not only during "reading" as we have traditionally defined it, but also during short breaks taken during reading, even after the "reading" itself has commenced, even after the "reading" has ceased.
- Comprehension is a consuming, continuous, and complex activity, but one that, for good readers, is both *satisfying and productive.*

(See Pressley and Afflerbach [1995] and Block and Pressley [2001] for reviews of much of the research on good readers' comprehension. The intellectual ancestor to this chapter is "Developing Expertise in Reading Comprehension" [Pearson, Roehler, Dole, & Duffy, 1992] in the second edition of *What Research Has to Say About Reading Instruction*; this piece also provides a good overview of the work upon which this characterization of good reading is based).

Given knowledge about what good readers do when they read, researchers and educators have addressed the following question: Can we teach students to engage in these productive behaviors? The answer is a resounding yes. A large volume of work indicates that we can help students acquire the strategies and processes used by good readers—and that this improves their overall comprehension of text, both the texts used to teach the strategies and texts they read on their own in the future.

In this chapter, we will describe some proven instructional techniques for helping students acquire productive comprehension skills and strategies. As you will see, there is a large if not overwhelming number and range of techniques that work, yet the use of even one technique alone has been shown to improve students' comprehension. Teaching what we call *collections* or *packages* of comprehension strategies can help students become truly solid comprehenders of many kinds of text.

Balanced Comprehension Instruction

To borrow a term from the decoding debate, comprehension instruction should be *balanced.* By this we mean that good comprehension instruction includes both explicit instruction in specific comprehension strategies and a great deal of time and opportunity for actual reading, writing, and discussion of text. The components in our approach to balanced comprehension instruction are a supportive classroom context and a model of comprehension instruction.

A Supportive Classroom Context

It is not enough just to offer good instruction. Several important features of good reading instruction also need to be present. Otherwise, the comprehension instruction will not take hold and flourish. These features include the following:

- *A great deal of time spent actually reading.* As with decoding, all the explicit instruction in the world will not make students strong readers unless it is accompanied by lots of experience applying their knowledge, skills, and strategies during actual reading.
- *Experience reading real texts for real reasons.* To become strong, flexible, and devoted comprehenders of text, students need experience reading texts beyond those designed solely for reading instruction, as well as experience reading text with a clear and compelling purpose in mind.
- *Experience reading the range of text genres that we wish students to comprehend.* Students will not learn to become excellent comprehenders of any given type of text without substantial experience reading and writing it. For example, experience reading storybooks will not, by itself, enable a student to read, understand, and critique procedural forms of text of the sort found in how-to books, instruction manuals, and the like.

- *An environment rich in vocabulary and concept development through reading, experience, and, above all, discussion of words and their meanings.* Any text comprehension depends on some relevant prior knowledge. To some degree, well-chosen texts can, in themselves, build readers' knowledge base. At the same time, hands-on activities, excursions, conversations, and other experiences are also needed to develop vocabulary and concept knowledge required to understand a given text.
- *Substantial facility in the accurate and automatic decoding of words.* In a recent review of the literature, Pressley (2000) argues compellingly that skilled decoding is necessary, although by no means sufficient, for skilled comprehension.
- *Lots of time spent writing texts for others to comprehend.* Again, students should experience writing the range of genres we wish them to be able to comprehend. Their instruction should emphasize connections between reading and writing, developing students' abilities to write like a reader and read like a writer.
- *An environment rich in high-quality talk about text.* This should involve both teacher-to-student and student-to-student talk. It should include discussions of text processing at a number of levels, from clarifying basic material stated in the text to drawing interpretations of text material to relating the text to other texts, experiences, and reading goals.

A Model of Comprehension Instruction

The model of comprehension instruction we believe is best supported by research does more than simply include instruction in specific comprehension strategies and opportunities to read, write, and discuss texts—it connects and integrates these different learning opportunities. Specifically, we suggest an instructional model including the following five components:

1. *An explicit description of the strategy and when and how it should be used.* "Predicting is making guesses about what will come next in the text you are reading. You should make predictions a lot when you read. For now, you should stop every two pages that you read and make some predictions."
2. *Teacher and/or student modeling of the strategy in action.* "I am going to make predictions while I read this book. I will start with just the

cover here. Hmm...I see a picture of an owl. It looks like he—I think it is a he—is wearing pajamas, and he is carrying a candle. I *predict* that this is going to be a make-believe story because owls do not really wear pajamas and carry candles. I predict it is going to be about this owl, and it is going to take place at nighttime.

"The title will give me more clues about the book; the title is *Owl at Home.* So this makes me think even more that this book is going to be about the owl. He will probably be the main character. And it will take place in his house.

"Okay, I have made some predictions about the book based on the cover. Now I am going to open up the book and begin reading."

3. *Collaborative use of the strategy in action.* "I have made some good predictions so far in the book. From this part on I want you to make predictions with me. Each of us should stop and think about what might happen next.... Okay, now let's hear what you think and why...."

4. *Guided practice using the strategy with gradual release of responsibility.*

   Early on...

   "I have called the three of you together to work on making predictions while you read this and other books. After every few pages I will ask each of you to stop and make a prediction. We will talk about your predictions and then read on to see if they come true."

   Later on...

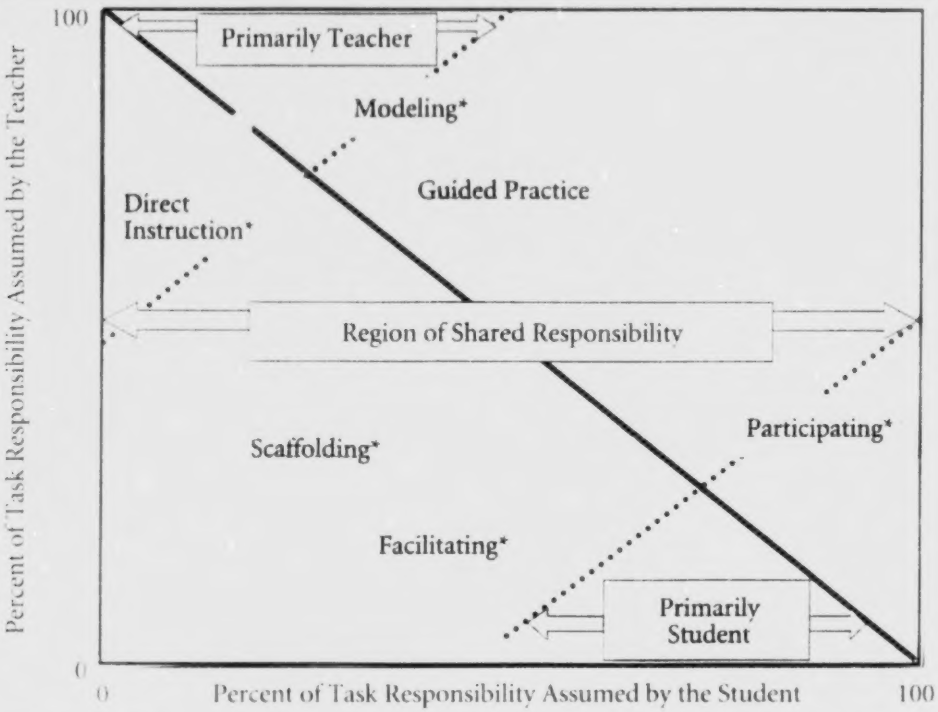
   "Each of you has a chart that lists different pages in your book. When you finish reading a page on the list, stop and make a prediction. Write the prediction in the column that says 'Prediction.' When you get to the next page on the list, check off whether your prediction 'Happened,' 'Will not happen,' or 'Still might happen.' Then make another prediction and write it down." (This is based on the Reading Forecaster Technique from Mason and Au [1986] described and cited in Lipson and Wixson [1991].)

5. *Independent use of the strategy.* "It is time for silent reading. As you read today, remember what we have been working on—making predictions while we read. Be sure to make predictions every two or three pages. Ask yourself why you made the prediction you did—what made you think that. Check as you read to see whether

your prediction came true. Jamal is passing out Predictions! bookmarks to remind you."

Throughout these five phases, it is important that neither the teacher nor the students lose sight of the need to coordinate or orchestrate comprehension strategies. Strategies are not to be used singly—good readers do not read a book and *only* make predictions. Rather, good readers use multiple strategies constantly. Although the above model foregrounds a particular strategy at a particular time, other strategies should also be referenced, modeled, and encouraged throughout the process. A way of conceptualizing the orchestration process is captured in a classic visual model from Pearson and Gallagher's (1983) early work on comprehension instruction. In that model (see Figure 10.1), teachers move from a situation in which they assume all the responsibility for performing a task

Figure 10.1. Gradual release of responsibility


100
Primarily Teacher
Modeling*
Direct Instruction*
Guided Practice
Region of Shared Responsibility
Scaffolding*
Participating*
Facilitating*
Primarily Student
0
0
Percent of Task Responsibility Assumed by the Student
100
Percent of Task Responsibility Assumed by the Teacher

As one moves down the diagonal from upper left to lower right, students assume more, and teachers less, responsibility for task completion. There are three regions of responsibility: primarily teacher in the upper left corner, primarily student in the lower right, and shared responsibility in the center. (This figure is adapted with permission from Pearson and Gallagher [1983]; the asterisked terms are borrowed from Au & Raphael [1998].)

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while the student assumes none, which we would call modeling or demonstrating a strategy (the upper left corner), to a situation in which the students assume all the responsibility while the teacher assumes none, which we would call independent strategy use (lower right corner), a situation in which teachers can shift to a participation mode, performing tasks in much the same way as any other group member. Instruction in the upper left corner would be labeled teacher centered, whereas instruction in the lower right would be student centered.

Other Teaching Considerations

Choosing well-suited texts. Another important role for the teacher in implementing this model is in choosing the texts to use. At least some of the texts used during these different phases of comprehension instruction should be chosen to be particularly well suited to application of the specific strategy being learned. Just as many have recommended using texts in decoding instruction that emphasizes the particular sound-letter relationships students are learning, we recommend linking closely the comprehension strategy being taught to the texts to which it is initially applied and practiced. For example, a good text for learning about the prediction strategy would be one that students have not read before (hence, they would not already know what happens next), that has a sequence of events, and that provides sufficient clues about upcoming events for the reader to make informed predictions about them. Also, as is recommended for decoding instruction, we recommend careful attention to the level and demands of texts used in different phases of instruction, especially the early phases. When students are first learning a comprehension strategy, they should encounter texts that do not make heavy demands in other respects, such as background knowledge, vocabulary load, or decoding. Later, of course, students must be asked to apply the strategy to the range of texts they will meet during everyday reading—in reading/ language arts, in content area classes (i.e., social studies, science, and mathematics), and on their own.

Concern with student motivation. The level of motivation students bring to a task impacts whether and how they will use comprehension strategies (Dole, Brown, & Trathen, 1996; Guthrie et al., 1996). Therefore, the model we suggest, in particular the independent practice portion, should be made as motivating to students as possible. Accompaniments to comprehension instruction we have already noted—such as providing experience reading real texts for real reasons and creating an environment rich in high-quality talk about text—will undoubtedly help. Other strategies can be found in books, articles, and chapters devoted specifically to the topic of motivation and engagement (e.g., Guthrie & Wigfield, 1997).

Ongoing assessment. Finally, as with any good instruction, comprehension instruction should be accompanied by ongoing assessment. Teachers should monitor students' use of comprehension strategies and their success at understanding what they read. Results of this monitoring should, in turn, inform the teacher's instruction. When a particular strategy continues to be used ineffectively, or not at all, the teacher should respond with additional instruction or a modified instructional approach. At the same time, students should be monitoring their own use of comprehension strategies, aware of their strengths as well as their weaknesses as developing comprehenders.

Building a Comprehension Curriculum

With this overall model for comprehension instruction as a background to be used in teaching any useful strategy, we now turn to specific comprehension strategies that research has shown to be effective in improving students' comprehension of text. These are the strategies we recommend explaining and modeling for students and then emphasizing in shared, guided, and independent reading. The effectiveness of these strategies is not limited to a particular age group. Age groups used in studies consulted for this review range from kindergarten through college level. Certainly not every strategy presented has been tested for this entire range of age groups, but neither is there substantial evidence to indicate that any strategy is inappropriate for any age range. First, we introduce six important strategies, and then we review some "routines" that actually integrate several strategies in a single activity.

Effective Individual Comprehension Strategies

Prediction. We have labeled the first strategy prediction, although it is better conceived as a family of strategies than a single, identifiable strategy. At its core is making predictions and then reading to see how they turned out, but it also entails activities that come with different labels, such as activating prior knowledge, previewing, and overviewing. What all these variants have in common is encouraging students to use their existing knowledge to facilitate their understanding of new ideas encountered in text. Although these strategies have some earlier roots (e.g., Ausabel, 1968; Stauffer, 1976, 1980), these activities are most clearly the legacy of the 1980s, with its emphasis on schema theory (Anderson & Pearson, 1984) and comprehension as the bridge between the known and the new (Pearson & Johnson, 1978).

Although it might seem reasonable to expect research on prediction and prior knowledge activation to be equally distributed across narrative and expository text genres, it is decidedly biased toward narrative texts (see Pearson & Fielding, 1991). Two activities dominate the work: making predictions and activating prior knowledge about story theme, content, or structure. Hansen's work (Hansen, 1981; Hansen & Pearson, 1983) provides rich examples of prior knowledge activation. In both instances, students were encouraged to generate expectations about what characters might do based on their own experiences in similar situations. This technique led to superior comprehension of the stories in which the activity was embedded and to superior performance for younger and less able older readers on new stories that the students read without any teacher support. Working with fourth-grade students, Neuman (1988) found that when teachers presented students with oral previews of stories, which were then turned into discussions and predictions, story comprehension increased relative to "read only" previews and typical basal background-building lessons. In a creative variation of the preview theme, McGinley and Denner (1987) had students compose very short narratives based on a list of keywords from the upcoming story. For example, terms such as *loose tooth, string, pain, baseball game, tie score,* and *home run* might serve as keywords for an upcoming story about a girl who has a loose tooth that will not come out but falls out naturally when she is engrossed in a close ballgame. Interestingly, the accuracy of their "prediction" stories proved relatively unimportant in explaining subsequent comprehension of the real stories; apparently, it was the engagement itself that triggered the deeper story comprehension.

Explicit attempts to get students to engage in prediction behaviors have proved successful in increasing interest in and memory for stories (Anderson, Wilkinson, Mason, & Shirey, 1987). Fielding, Anderson, and Pearson (1990) found that prediction activities promoted overall story understanding only if the predictions were explicitly compared to text ideas during further reading, suggesting that the verification process, in which knowledge and text are compared explicitly, may be as important as making the prediction.

These studies suggest a variety of productive ways of encouraging students to engage their knowledge and experience prior to reading. They also suggest that in nearly all cases, the impact on story understanding is positive, at least for narrative texts in which themes and topics are likely to be highly familiar. The situation may be quite different in reading expository texts, especially if students' existing knowledge is riddled with misconceptions about matters of science and prejudices in the realm of human experience (see, for example, Guzzetti, Snyder, Glass, & Gamas, 1993).

Think-aloud. Another proven instructional technique for improving comprehension is think-aloud. As its name implies, think-aloud involves making one's thoughts audible and, usually, public—saying what you are thinking while you are performing a task, in this case, reading. Think-aloud has been shown to improve students' comprehension both when students themselves engage in the practice during reading and also when teachers routinely think aloud while reading to students.

Teacher think-aloud. Teacher think-aloud is typically conceived of as a form of teacher modeling. By thinking aloud, teachers demonstrate effective comprehension strategies and, at least as importantly, when and when not to apply them. For example, in the following teacher think-aloud, the teacher demonstrates the use of visualization and prediction strategies:

> That night Max wore his wolf suit and made mischief of one kind and another.... Boy, I can really visualize Max. He's in this monster suit and he is chasing after his dog with a fork in his hand. I think he is really starting to act crazy. I wonder what made Max act like that...Hm-m-m...I bet he was getting a little bored and wanted to go on an adventure. I think that is my prediction. (Pressley et al., 1992, p. 518)

Studies typically have not examined the effect of teacher think-aloud by itself, but rather as part of a package of reading comprehension strategies. Therefore, although we cannot infer directly that teacher think-aloud is effective, it is clear that as part of a package, teacher think-aloud has been proven effective in a number of studies. For example, teacher think-aloud is part of the Informed Strategies for Learning (ISL) program (Paris, Cross, & Lipson, 1984), the reciprocal teaching approach (see later discussion), and the SAIL program (see later discussion), all of which have been shown to be effective at improving student comprehension. It is also an important part of the early modeling stages of instruction in many comprehension training routines, for example, the QAR work of Raphael and her colleagues (Raphael, Wonnacott, & Pearson, 1983) and the inference training work of Gordon and Pearson (1983). These studies suggest that teacher modeling is most effective when it is explicit, leaving the student to intuit or infer little about the strategy and its application, and flexible, adjusting strategy use to the text rather than presenting it as governed by rigid rules. Teacher think-aloud with these attributes is most likely to improve students' comprehension of text.

Student think-aloud. Instruction that entails students thinking aloud themselves also has proven effective at improving comprehension (see Kucan & Beck, 1997, for a review). A classic study by Bereiter and Bird (1985) showed that students who were asked to think aloud while reading had better comprehension than students who were not taught to think aloud, according to a question-and-answer comprehension test. A compelling study by Silven and Vauras (1992) demonstrated that students who were prompted to think aloud as part of their comprehension training were better at summarizing information in a text than students whose training did not include think-aloud.

Several scholars have theorized about why student think-aloud is effective at improving comprehension. One popular theory is that getting students to think aloud decreases their impulsiveness (Meichebaum & Asnarow, 1979). Rather than jumping to conclusions about text meaning or moving ahead in the text without having sufficiently understood what had already been read, think-aloud may lead to more thoughtful, strategic reading. A study conducted with third-grade students provides some empirical support for this theory. Baumann and his colleagues found that training in think-aloud improved children's ability to monitor their comprehension while reading (Baumann, Seifert-Kessel, & Jones, 1992). Third-grade children trained to think aloud as they used several comprehension strategies were better than a comparison group at detecting errors in passages, responding to a questionnaire about comprehension monitoring, and completing cloze items. One student trained in think-aloud explained, "When I read I think, is this making sense? I might...ask questions about the story and reread or retell the story" (Baumann et al., p. 159). This and other student comments suggested a thoughtful, strategic approach to reading through think-aloud.

Text structure. Beginning in the late 1970s and extending throughout the 1980s into the early 1990s, we witnessed an explosion of research about the efficacy of teaching children to use the structure of texts, both narrative and expository, to organize their understanding and recall of important ideas. Most of the research emphasized the structural aspects of text organization rather than the substance of the ideas, the logic being that it was structure, not content, that would transfer to new texts that students would meet on their own.

Story structure. The research on story structure uses a few consistent heuristics to help students organize their story understanding and recall. Usually, these are organized into a story grammar (see Mandler, 1978; Stein & Glenn, 1979), or as it is commonly called in instructional parlance, a story map (see Pearson, 1981), which includes categories such as setting, problem, goal, action, outcome, resolution, and theme. Instruction typically consists of modeling, guided practice, and independent practice in recognizing parts of the stories under discussion that instantiate, or "fill," each category. Although there are situations, texts, and populations in which this sort of instruction does not appear helpful, in the main, story structure instruction shows positive effects for a wide range of students, from kindergarten (Morrow, 1984a, 1984b) to the intermediate grades (Gordon & Pearson, 1983; Nolte & Singer, 1985) to high school (Singer & Donlan, 1982) to special populations (Idol, 1987), and to students identified as struggling readers (Fitzgerald & Spiegel, 1983). Regarding transfer, although the effects are complex and sometimes subtle, it appears the effects are most stable for the texts in which the instruction has been embedded (Singer & Donlan, 1982), and they do transfer to new, independently read texts (Gordon & Pearson, 1983; Greenewald & Rossing, 1986).

Informational text structure. Most of the research establishing the positive impact of helping students learn to use the structural features of informational texts as aides to understanding and recall has been conducted since the appearance of elaborate text analysis schemes in the late 1970s (e.g., Kintsch & Van Dijk, 1978; Meyer, 1975; see also Meyer & Rice, 1984, for a complete review of this early work). The early work documented the significance of attention to text structure, pointing out that students—for whatever reasons, including the fact that they are simply better readers—who are more knowledgeable about text structure recall more textual information than those who are less knowledgeable (Bartlett, 1978; Meyer, Brandt, & Bluth, 1980). The work also suggested that knowledge is not enough. Students must actually follow the text's structure in building their recall for the effect to be realized; not surprisingly, more good than poor readers are inclined to do so (Bartlett, 1978; Taylor, 1980).

The approaches to teaching text structure have exhibited substantial variability, beginning with general attempts to sensitize students to structural elements (e.g., Bartlett, 1978; Davis, Lange, & Samuels, 1988; Slater, Graves, & Piche, 1985) and extending to hierarchical summaries of key ideas (e.g., Taylor & Beach, 1984) and to visual representations of key ideas, such as conceptual maps, semantic networks, charts, and graphs (e.g., Armbruster & Anderson, 1980; Armbruster, Anderson, & Ostertag, 1987; Gallagher & Pearson, 1989; Geva, 1983; Holley & Dansereau, 1984). In general, the research suggests that almost any approach to teaching the structure of informational text improves both comprehension and recall of key text information. One plausible explanation is that systematic attention to the underlying organization, whether intended by the authors of texts or not, helps students relate ideas to one another in ways that make them more understandable and more memorable. Another plausible explanation is that it is actually knowledge of the content, not facility with text structure, that children acquire when they attend to the structural features of text. In other words, text structure is nothing more than an alias for the underlying structure of knowledge in that domain.

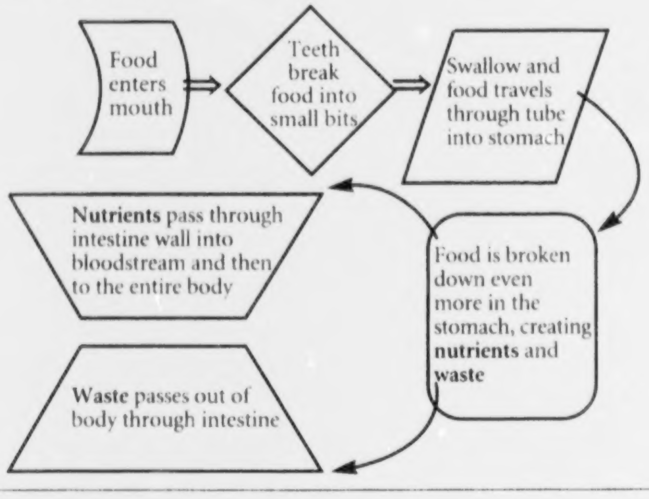
Only a few of the studies in this area have evaluated these competing hypotheses. The results of the Gallagher and Pearson (1989) work suggest that both content and structural features contribute to the salutary effects of "text structure" instruction. Over a series of several weeks, Gallagher and Pearson taught fourth-grade students, mainly poor readers, to apply a consistent structural framework, instantiated as a set of matrix charts and flowcharts, to their reading and discussion of short books about different social insects (ants, bees, and termites). The outcome measures included several independently read passages, each passage successively more distant from the original social insect books. They read, in order, a passage about a fourth social insect, the paper wasp, a passage about a human society, and a passage about geographic formations such as gulfs, capes, peninsulas, and the like. As the conceptual distance between the original set of books and the testing passages increased, the effect of the intervention (compared with a group who read the same texts and answered questions and with a group that only read the texts) decreased in magnitude, but was still statistically significant, suggesting that students were learning something about (a) insect societies, (b) social organization in general, and (c) how to unearth the structure of an informational text. From a classroom teacher's perspective, there is some comfort in knowing that content knowledge and text structure are naturally intertwined; after all, either or both represent legitimate curricular goals.

Visual representations of text. There is an old saying that a picture is worth a thousand words. When it comes to comprehension, this saying might be paraphrased, "a visual display helps readers understand, organize, and remember some of those thousand words." Compare the short text on digestion to the flow chart in Figure 10.2. The text is verbal, abstract, and eminently forgettable; by contrast, the flowchart is visual, concrete, and arguably more memorable.

Figure 10.2. Text versus visual representation

Text describing the digestive process:
When you eat, you use your teeth to break food apart into tiny particles. These pieces mix with saliva to become a kind of mush. When you swallow, the food goes through a tube into your stomach, where it is digested. During digestion, your body breaks down the food into smaller and smaller bits. The food contains things your body needs, which we call nutrients. As the food passes from the stomach into the intestine, the nutrients pass through the walls of intestine into your bloodstream. Your bloodstream carries these nutrients to all parts of your body. The part of the food that is not digested, which we call waste, passes out of the body through the intestine.

Flowchart of the digestive process:

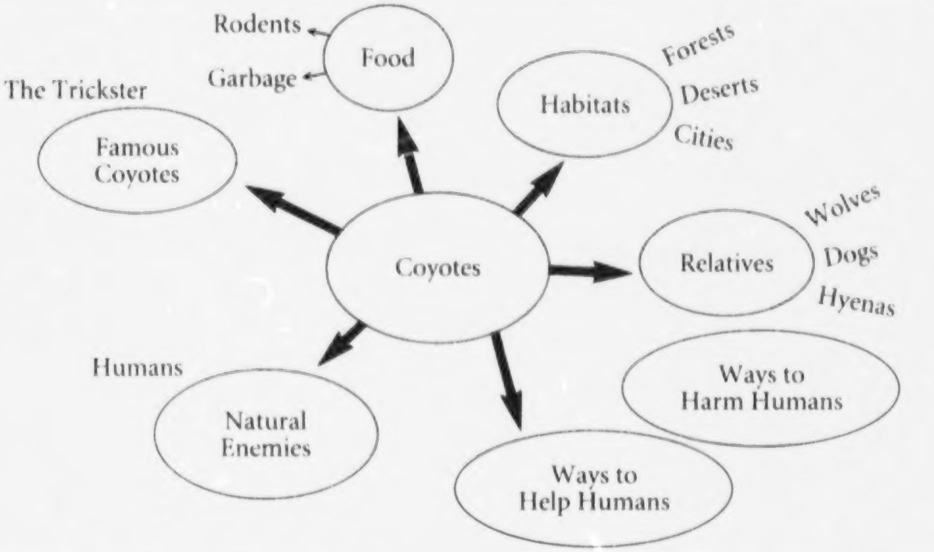

Food enters mouth
Teeth break food into small bits
Swallow and food travels through tube into stomach
Food is broken down even more in the stomach, creating **nutrients** and **waste**
Nutrients pass through intestine wall into bloodstream and then to the entire body
Waste passes out of body through intestine

That said, we readily admit that when it comes to the use of visual representations of text, it is difficult, perhaps impossible, to specify exactly what it is that students attend to and learn when teachers use them as heuristic devices to aid in comprehension and recall. The ubiquitous use of semantic maps and webs reveals this ambiguity. Consider, for example, the web in Figure 10.3.

This could be a graphic summary of an article about coyotes. Or, it could be a map of an individual's (or a whole class's collective) knowledge about coyotes. Or, it could be a heuristic device used by a teacher to teach key vocabulary in a unit on scavenging animals. In a practical sense, as we pointed out in discussing text structure instruction, it does not really matter. To the contrary, we would expect tools and activities that improve comprehension to also enhance knowledge of text structure and vocabulary acquisition. The point about visual representations is that they are *re*-presentations; literally, they allow us to present information *again.* It is through that active, transformative process that knowledge, comprehension, and memory form a synergistic relationship—whatever improves one of these elements also improves the others.

Much of the research cited in the previous section on text structure applies to the use of visual displays. Most notable, because of their

Figure 10.3. A semantic map of the concept, coyotes


Rodents
Garbage
Food
The Trickster
Famous Coyotes
Habitats
Forests
Deserts
Cities
Coyotes
Relatives
Wolves
Dogs
Hyenas
Humans
Natural Enemies
Ways to Harm Humans
Ways to Help Humans

consistent use of visual displays over an extended time period, is the work of Armbruster, Anderson, and Ostertag (1987) and Gallagher and Pearson (1989). Armbruster and colleagues (1987) employed the heuristic of a general frame to assist students in learning from expository text. For example, in history, a conflict frame is useful in organizing many historical phenomena: One side wants X, the other wants Y, their desires collide in some sort of conflict (war, debate, political battle), and some sort of resolution, often tentative, is reached. In their approach to teaching frames, Armbruster and her colleagues (Armbruster et al., 1987; Armbruster, Anderson, & Meyer, 1990) have identified and successfully taught students, usually at the middle school level, to use several generic frames as tools for organizing what they are learning from their reading, among them frames for depicting conflicts, cause-effect relations, descriptions, explanations, and procedures. The effects in this work are usually quite dramatic in improving understanding and recall for the texts in which the instruction is embedded; transfer effects to new passages read without assistance or without the requirement that the frames be used is much less impressive.

An exception to the transfer effect finding is the work of Gallagher and Pearson (1989), described earlier in conjunction with text structure instruction. Recall that although transfer decreased as a function of conceptual distance from the original information domain (insect societies), it was nonetheless significant even for passages on unrelated topics. What may be central in this sort of instruction, besides consistent and persistent guidance in how and why to use the visual displays, is direct involvement in constructing the visual display along with compelling feedback to the students in the form of evidence that the arduous effort involved in *re*-presenting information pays off in terms of learning and, in the case of older students, better grades.

Summarization. Teaching students to summarize what they read is another way to improve their overall comprehension of text. Dole, Duffy, Roehler, and Pearson (1991) describe summarizing as follows:

> Often confused with determining importance, summarizing is a broader, more synthetic activity for which determining importance is a necessary, but not sufficient, condition. The ability to summarize information requires readers to sift through large units of text, differentiate important from unimportant ideas, and then synthesize those ideas and create a new coherent text that stands for, by substantive criteria,

> the original. This sounds difficult, and the research demonstrates that, in fact, it is. (p. 244)

Indeed, most people with relevant experience will agree that summarizing is a difficult task for many children. Many children require instruction and practice in summarizing before they are able to produce good oral and written summaries of text. Interestingly, research suggests that instruction and practice in summarizing not only improves students' ability to summarize text, but also their overall comprehension of text content. Thus, instruction in summarization can be considered to meet dual purposes: to improve students' ability to summarize text and to improve their ability to comprehend text and recall.

There are at least two major approaches to the teaching of summarization. In rule-governed approaches, students are taught to follow a set of step-by-step procedures to develop summaries. For example, McNeil and Donant (1982) teach the following rules, which draw from the work of Brown, Campione, and Day (1981) and Kintsch and Van Dijk (1978):

Rule 1: Delete unnecessary material.
Rule 2: Delete redundant material.
Rule 3: Compose a word to replace a list of items.
Rule 4: Compose a word to replace individual parts of an action.
Rule 5: Select a topic sentence.
Rule 6: Invent a topic sentence if one is not available.

Through teacher modeling, group practice, and individual practice, students learn to apply these rules to create brief summaries of text.

Other approaches to summarizing text are more holistic. One that has been the subject of research is the GIST procedure (Cunningham, 1982). In GIST, students create summaries of 15 or fewer words for increasingly large amounts of text, beginning with single sentences and working incrementally to an entire paragraph. As Cunningham describes it, GIST is conducted first as a whole class, then in small groups, and finally on an individual basis.

Working with sixth-grade students, Bean and Steenwyk (1984) studied the effectiveness of McNeil and Donant's set of rules procedure and Cunningham's GIST procedure. They found that versions of both approaches were effective not only in improving students' written summaries of text, but also in improving their comprehension of text as measured by a standardized test. Despite being markedly different, the two approaches were roughly equal in their effectiveness, and both were superior to a control technique that involved only practice in writing summaries based on the main ideas in text.

Perhaps one of the reasons why both McNeil and Donant's and Cunningham's summary procedures are effective is that they are both consistent with an overall model of text processing that itself has stood the test of validation: Kintsch and Van Dijk's (1978) model of text comprehension posits that text is understood through a series of identifiable mental operations. These operations are necessary for understanding both the local and the more global meaning of text within the constraints of working memory, the reader's goals, and the structure of the text. Although a thorough description of these operations is beyond the scope of this chapter, they essentially involve a series of deletions, inferences, and generalizations, much like those required by the summarizing procedures later used by McNeil and Donant.

Questions/questioning. No comprehension activity has a longer or more pervasive tradition than asking students questions about their reading, whether this occurs before, during, or after the reading (see Durkin, 1978, for compelling evidence of the ubiquity of this practice). We also know much about the effect of asking different types of questions on students' understanding and recall of text, with the overall finding that students' understanding and recall can be readily shaped by the types of questions to which they become accustomed (the classic review is Anderson & Biddle, 1975, but see also Levin & Pressley, 1981; Pressey, 1926; Rickards, 1976). Thus, if students receive a steady diet of factual detail questions, they tend, in future encounters with text, to focus their efforts on factual details. If teachers desire recall of details, this is a clear pathway to shaping that behavior. If, by contrast, more general or more inferential understanding is desired, teachers should emphasize questions that provide that focus. When students often experience questions that require them to connect information in the text to their knowledge base, they will tend to focus on this more integrative behavior in the future (e.g., Hansen, 1981).

Although the impact of questions on comprehension is important, for our purposes, the more interesting questions are (a) whether students can learn to generate their own questions about text and (b) what impact this more generative behavior might have on subsequent comprehension. The research on engaging students in the process of generating questions about the texts they read, although not definitive, is generally positive and encouraging (see Rosenshine, Meister, & Chapman, 1996, for a review). Raphael and her colleagues (Raphael & McKinney, 1983; Raphael & Pearson, 1985; Raphael & Wonnacott, 1985) carried out perhaps the most elaborate line of work on question generation in the mid-1980s. Using a technique called QARs (Question-Answer-Relationships), Raphael and her colleagues modeled and engaged students in the process of differentiating the types of questions they could ask of text. Students learned to distinguish among three types of questions: (1) *Right There* QARs were those in which the question and the answer were explicitly stated in the text, (2) *Think and Search* QARs had questions and answers in the text, but some searching and inferential text connections were required to make the link, and (3) *On My Own* QARs were those in which the question was motivated by some text element or item of information, but the answer had to be generated from the students' prior knowledge. Through a model of giving students ever-increasing responsibility for the question generation, Raphael and her colleagues were able to help students develop a sense of efficacy and confidence in their ability to differentiate strategies in both responding to and generating their own questions for text.

Later research by Yopp (1988) indicated that when students learn to generate questions for text, their overall comprehension improves. In a variation that wedded the logic of QARs with the work on story schemas (e.g., Singer & Donlan, 1982), Yopp studied three different groups that varied in terms of who was taking the responsibility for question generation. In the first group, the teacher asked the questions; in the second, the students generated their own; in the third, the students generated their own and were provided with a metacognitive routine (in the manner of QAR) for answering their own questions. The second and third groups performed better on posttests given during instruction and after the instruction had ended, suggesting that student control of the questioning process is a desirable instructional goal. Furthermore, although it did not translate into higher performance on the comprehension assessments, the third group, those who received the additional metacognitive routine, were better at explaining the processes they used to answer questions.

Perhaps the most compelling evidence for the efficacy of teaching students to generate their own questions while reading comes from the research cited in the subsequent section in which we move from individual strategies to comprehension routines. The three routines described—reciprocal teaching, transactional strategies instruction, and Questioning the Author—are all research-based approaches to teaching comprehension that, as a part of their overall approach, teach students how to ask questions about text. That the question-generation strategy works so well as part of a larger and more comprehensive routine suggests that when it is implemented in classrooms, it is probably better to use it not as a steady routine repeated for every text encountered, but as an activity that is regularly but intermittently scheduled into guided or shared reading.

Summary of the six individual comprehension strategies. To summarize, we have identified six individual comprehension strategies that research suggests are beneficial to teach to developing readers: prediction/prior knowledge, think-aloud, text structure, visual representations, summarization, and questions/questioning. Although somewhat different terminology is used, these strategies were also identified by the recent National Reading Panel (NRP) report (2000), commissioned by the U.S. Congress to evaluate research in the area of beginning reading. The NRP report also identified "Comprehension Monitoring" and "Cooperative Learning" as effective comprehension strategies. We address comprehension monitoring to some degree in the section covering think-aloud. We view cooperative learning as an instructional medium rather than a comprehension strategy, and therefore have not included it in our analysis. However, the assumption of collaborative work among students and between the teacher and students is implicit in the overall approach to comprehension we recommend in the first section of this chapter, as well as in the comprehension routines discussed later.

A great deal of research suggests that vocabulary and comprehension are inextricably linked. Thus, strategies related to ascertaining the meaning of unknown words, as well as general vocabulary building, are also essential to a strong program in comprehension instruction.

Effective Comprehension Routines

In this section we move from individual strategies—highly specific processes that might be embedded into essentially any discussion of text and combined with other strategies—to what we have termed *comprehension routines.* By using the term *routine*, we mean to capture the idea of an integrated set of practices that could be applied regularly to one text after another, and in the process, provide students with two benefits: (1) better understanding of the texts to which the routines are applied, and (2) the development of an infrastructure of processes that will benefit encounters with future text, especially texts that students must negotiate on their own. One of these routines, transactional strategies instruction, borders on being a complete comprehension curriculum. We have chosen to focus on three routines—reciprocal teaching, transactional strategies instruction, and Questioning the Author (QtA)—although there are other research-tested practices that might be characterized also as routines, such as the Directed Reading-Thinking Activity (DR-TA) (e.g., Baumann et al., 1992) and Informed Strategies for Learning (Paris, Cross, & Lipson, 1984).

Reciprocal teaching. Four comprehension strategies—predicting, questioning, seeking clarification, and summarizing—are the focus of the reciprocal teaching approach. Originally developed by Annemarie Palincsar (1982; also Brown & Palincsar, 1985; Palincsar & Brown, 1984), reciprocal teaching involves a gradual release of responsibility from teacher to student for carrying out each part of the routine. In the early stages of the reciprocal teaching, the teacher does much modeling of the target comprehension strategies. In some versions of reciprocal teaching, this includes direct teaching of each individual strategy and the use of worksheets for practice strategies (e.g., Palincsar, Brown, & Martin, 1987). As time goes on, students assume increasing control over strategy use, eventually using the strategies with little or no teacher support.

A typical reciprocal teaching session begins with a review of the main points from the previous session's reading, or if the reading is new, predictions about the text based on the title and perhaps other information. Following this, all students read the first paragraph of the text silently to themselves. A student assigned to act as teacher then (a) asks a question about the paragraph, (b) summarizes the paragraph, (c) asks for clarification if needed, and (d) predicts what might be in the next paragraph. During the process, the teacher prompts the student/teacher as needed, and at the end provides feedback about the student/teacher's work.

Reciprocal teaching sessions are intended to take approximately 30 minutes, and they can include more than one student in the role of teacher each session. Although typically conducted in small groups, reciprocal teaching has been conducted in one-to-one and whole-group formats. The approach has been used with both good and struggling readers. The following dialogues come from reciprocal teaching sessions with students struggling with the technique:

T: What would be a good question about pit vipers that starts with the word *why*?

S: (No response)

T: How about, "Why are the snakes called pit vipers?"

S: How do spinner's mate is smaller than.... How am I going to say that?

T: Take your time with it. You want to ask a question about the spinner's mate and what he does, beginning with the word *how*.

S: How do they spend most of his time sitting?

T: You're very close. The question would be "How does the spinner's mate spend most of his time?" Now you ask it.

T: That was a fine job, Ken, but I think there might be something to add to our summary. There is more information that I think we need to include. This paragraph is mostly about what?

S: The third method of artificial evaporation. (Palincsar & Brown, 1984, p. 138)

This next dialogue comes from a first-grade class employing reciprocal teaching.

S1: My question is, what does the aquanaut need when he goes under water?

S2: A watch.

S3: Flippers.

S4: A belt.

S1: Those are all good answers.

T: Nice job! I have a question too. Why does the aquanaut wear a belt? What is so special about it?

S3: It's a heavy belt and keeps him from floating up to the top again.

T: Good for you.

S1: For my summary now: This paragraph was about what aquanauts need to take when they go under the water.

S5: And also about why they need those things.

S3: I think we need to clarify *gear*.

S6: That's the special things they need.

T: Another word for *gear* in this story might be *equipment*, the equipment that makes it easier for the aquanauts to do their job.

S1: I don't think I have a prediction to make.

T: Well, in the story they tell us that there are "many strange and wonderful creatures" that the aquanauts see as they do their work. My prediction is that they'll describe some of these creatures. What are some of the strange creatures you already know about that live in the ocean?

S6: Octopuses.

S3: Whales?

S5: Sharks!

T: Let's listen and find out. Who'll be our teacher? (Palincsar & Brown, 1986, p. 771)

The important role of the teacher as guide is evident throughout the dialogues. In addition to the modeling and scaffolding represented here, the teacher routinely reminds students of why these strategies are important and how they will help students in their reading.

Many studies have investigated the effectiveness of reciprocal teaching. Rosenshine and Meister (1994) reviewed 16 studies of the technique and concluded that reciprocal teaching is effective at improving comprehension of text. This was evident from both experimenter-developed comprehension tests and, to a lesser extent, from standardized tests of comprehension. In another review of research on the approach, Moore (1988) also found reciprocal teaching to be effective across multiple studies. Reciprocal teaching has been compared with many other approaches to comprehension instruction, including teacher modeling alone, explicit instruction and worksheets alone, daily practice at reading test passages and answering accompanying questions, and training at locating information to address different kinds of comprehension questions. In all cases, reciprocal teaching was found to be a more effective approach. (An innovation on reciprocal teaching known as Collaborative Strategic Reading [CSR] has also been shown to be effective in multiple research studies, including studies of the approach's effectiveness with English Language Learners. For more information about this approach, see Klinger and Vaughn [1999].)

Students Achieving Independent Learning (SAIL) and other transactional strategies approaches. The Students Achieving Independent Learning, or SAIL, program also teaches a package of comprehension strategies. Used in Montgomery County, Maryland, USA, strategies emphasized in SAIL include predicting, visualizing, questioning, clarifying, making associations (e.g., between the text and the students' experiences), and summarizing (Pressley et al., 1994). Use of these strategies is taught through teacher think-aloud and explicit instruction. Students practice the strategies in various settings, with an emphasis on student interpretation of text. Indeed, SAIL and a similar program used at the Benchmark School in Media, Pennsylvania, USA, have been characterized as transactional strategies instruction because of their emphasis on transactions among teacher, student, and text (Pressley et al., 1992).

In SAIL, the emphasis is on helping students learn when to use which comprehension strategies. The program uses a range of different kinds of texts that are often quite challenging for students because they are at or above grade level. Consider this summary of a SAIL lesson from a fourth-grade classroom:

- Teacher asks students to write a prediction about what the book will be about based on its cover.
- Teacher begins reading the book, thinking aloud as she reads (e.g., "I wonder if that is the Georgetown in Washington, D.C."; "August must be the name of a person").
- Students take turns reading aloud. As students read, the teacher cues students to apply strategies as appropriate (e.g., "Tell us what has been going on here").
- Students spontaneously employ strategies they have learned in previous work, including seeking clarification, relating the text to their lives, and visualizing (e.g., "I can see a...").
- Students return to their written predictions to assess their accuracy.

As this summary suggests, there is not a predetermined sequence of strategies to use in SAIL lessons. Rather, strategy use depends on the situation; students must coordinate their repertoire of comprehension strategies. Also, more attention is given to individual interpretation of text than to "right answers." Figure 10.4 lists the menu of strategies that can be used in transactional strategies instruction. Two features of the list are worth noting: First, it incorporates all the strategies within

Figure 10.4. Basic components of transactional strategies instruction

Cognitive Strategies	Interpretive Strategies
Thinking aloud	Character development Imagining how a character might feel Identifying with a character
Constructing images	Creating themes
Summarizing	Reading for multiple meanings
Predicting (prior knowledge activation)	Creating literal/figurative distinctions
Questioning	Looking for a consistent point of view
Clarifying	Relating text to personal experience
Story grammar analysis	Relating one text to another
Text structure analysis	Responding to certain text features such as point of view, tone, or mood

Strategies in *italics* are also a part of reciprocal teaching.

reciprocal teaching (on the cognitive side of the ledger). Second, the list is long enough to guarantee selective application (based on the text and the learning context) to any given text. There is no way that a teacher could ensure that each strategy was applied to every text encountered by a group of students.

Much of the research on SAIL and its intellectual cousin, transactional strategies instruction, has been qualitative, looking in detail at the ways that strategies are taught and learned. These studies suggest that SAIL and similar programs offer a promising approach to comprehension instruction, with rich, motivating interactions around text and increasing sophistication of student strategy use over time. One quasi-experimental study of SAIL has confirmed the effectiveness of the approach at improving student comprehension (Brown, Pressley, Van Meter, & Schuder, 1996). In the study, second-grade students in SAIL classrooms outperformed students in comparable non-SAIL classrooms on standardized measures of both reading comprehension and word attack. Students in SAIL classrooms also remembered more content from their daily lessons than students in non-SAIL classrooms. Additional evidence for the efficacy of this "family" of transactional strategy instruction routines can be found in Pressley's (1998) recent review.

Questioning the Author. Beginning in the early 1990s, Isabel Beck and Margaret McKeown, along with a group of colleagues at the University of Pittsburgh and in the surrounding schools, began work on a comprehension routine called Questioning the Author (QtA). Inspired by their own insights (see Beck, McKeown, Sandora, & Worthy, 1996, p. 386) in revising text to make it more considerate (Beck, McKeown, & Gromoll, 1989), Beck and her colleagues bootstrapped this approach to engaging students with text. The idea was that if they, as knowledgeable adult readers, found the process of trying to figure out what authors had in mind in writing a text in a certain way helpful, perhaps students would benefit from querying the author in a similar spirit. Hence, they developed a set of "generic questions" that could be asked as a teacher and group of students made their way through a text. The essential approach is to query a text collaboratively, section by section, with questions like those listed in Figure 10.5 as a guide.

Figure 10.5. Questions to guide the discussion in Questioning the Author

Goal	Candidate Questions
Initiate the discussion	• What is the author trying to say? • What is the author's message? • What is the author talking about?
Help students focus on the author's message	• That is what the author says, but what does it mean?
Help students link information	• How does that connect with what the author already told us? • What information has the author added here that connects to or fits in with...?
Identify difficulties with the way the author has presented information or ideas	• Does that make sense? • Is that said in a clear way? • Did the author explain that clearly? Why or why not? What's missing? What do we need to figure out or find out?
Encourage students to refer to the text either because they've misinterpreted a text statement or to help them recognize that they've made an inference	• Did the author tell us that? • Did the author give us the answer to that?

The expectation is that students who receive this sort of approach to text inquiry will develop improved understanding of the texts to which the routine is applied, improved understanding of texts they meet on their own at a later time, and most important, a critical disposition toward texts in general. Ideally, this approach will help students to entertain the possibility that a comprehension failure may have as much to do with the author's failure to provide a considerate message as it does with the failure of the reader to bring appropriate cognitive and affective resources to bear in trying to understand it.

The data on the efficacy of Questioning the Author (Beck et al., 1996) are encouraging. First, with the support of a professional community, teachers can learn to transform their text discussions from traditional recitations to these more student-centered, interpretive, and decidedly critical discussions. Second, when the routine is implemented, students assume a greater role in the overall text discussions, nearly doubling their piece of the discussion pie (compared with traditional discussions), and they initiate many more interactions. Third, and most important, students become much more successful at higher order comprehension and monitoring their comprehension as a result of participating in Questioning the Author. It is equally empowering to teachers and students. Those who wish to implement this approach should consult the works that Beck and her colleagues have written for classroom teachers (Beck, McKeown, Hamilton, & Kucan, 1997).

Where Will Comprehension Research Go? Some Challenges

There are many who believe that the kind of intense attention that has been aimed at issues of decoding, particularly in recent years, will soon turn to comprehension. Although this is desirable in terms of bringing attention to an often "quiet" literature and increasing the extent to which teachers, parents, and administrators think about how they teach (or fail to teach) comprehension, it is worrisome in light of the character of the decoding debates. Questions that worry us include the following:

- Will comprehension be understood in all of its complexity?

  Even the brief description at the beginning of the chapter of what good readers do when they read makes it clear that comprehension is complex. It has been difficult to convince many that decoding entails more than simply letter-by-letter "sounding out." It may also be difficult to convince many that comprehension is more than just listening to the words you decode to see if they make sense, and that it involves many different processes, that it entails a multiplicity of different strategies, and that it means different things in different contexts.

- Will we acknowledge that comprehension-learning is different for different people?

  Awareness of individual differences continues to be lacking in much discourse on decoding. Will it be lacking in discourse on comprehension? Will we come to terms with the notion that effective comprehension requires different kinds and amounts of instruction and experiences for different learners?

- Will our definition and fundamental understanding of comprehension keep pace with the changing nature of text?

  We still tend to characterize comprehension of text, and reading in general, as a linear process. This is true even though we know that good readers, whether adults or children, do not read even traditional texts linearly. Readers routinely skip ahead to sections of a text that they believe are most relevant to their reading goals or return to reread sections they first encountered much earlier in the reading. Some texts, such as computer manuals, magazines, and cookbooks, are almost never read from front to back. Even novels, although often read front to back, are sometimes read nonlinearly. A reader recently described to one of us how he usually skips the descriptive parts of each chapter, but returns to them if he gets the feeling he has missed an important detail. With the growing use of hypertext, Web links, and texts that are really webs of many loosely coupled but independently generated texts, increasingly more material will have to be read in a nonlinear style. In the future, text navigation may be linked with text comprehension.

- Will we question long-held or favorite assumptions about effective reading comprehension instruction?

  For example, we are guilty of routinely recommending that students read "real texts for real purposes" in the course of their reading comprehension instruction, although there is little or no research to support this recommendation directly. Research certainly shows that children can develop strong comprehension using authentic texts, but there is little or no research investigating whether, for example, reading comprehension skills develop better or more quickly when students are reading authentic texts rather than texts written solely for comprehension instruction. There is also little or no research investigating whether reading comprehension abilities develop better when students are reading texts for reasons that go beyond simply learning to read. We suspect (indeed we believe) that both genuine texts and authentic purposes are important aspects of quality comprehension instruction, and in the face of missing evidence, we will continue to recommend both, but neither can be unequivocally recommended with the force of compelling empirical evidence.

- Will we ask questions about the optimal numbers and kinds of comprehension strategies to teach?

  As noted throughout this chapter, we now know of a number of effective strategies, but we also suspect that there is a point of diminishing returns. If two well-taught, well-learned strategies are better than one, are three better than two, four better than three, and so on? Again, the field could continue to focus on developing additional effective strategies, but perhaps our attention is better focused on refining and prioritizing the strategies we already have.

- Will we ask the tough questions about reading comprehension instruction?

  In 1978, Dolores Durkin published her famous (perhaps infamous) study documenting the paucity of comprehension instruction and explicit strategy explanations in elementary classrooms. As our review documents, in the last 20 years we have learned a lot about how to ameliorate the situation Durkin found. Even so, later studies in the 1980s and 1990s have suggested that there is little reading comprehension instruction in schools (e.g., Pressley & Wharton-McDonald, 1998). We need to understand why many teachers do not focus directly on comprehension strategies and routines, and we need to learn more about how to help teachers provide good comprehension instruction. A central question is, How can and should teachers embed all these research-documented practices into a curriculum? It is one thing to demonstrate that if a comprehension strategy is taught systematically over, say, a 10-week period, students will benefit in terms of strategy acquisition, text comprehension, or even standardized test achievement. It is quite another to figure out how to "curricularize" that strategy, along with all the other research-proven strategies that might present themselves to a

> teacher or a district curriculum committee for regular inclusion into the reading program. Although each of the individual strategies and routines we have discussed represents an admirable addition to the comprehension curriculum, none could serve as the sole activity students encountered day after day, selection after selection.

Thus, providing some variety both within and among selections makes sense. We have little research, however, on optimal combinations and distributions of various strategies over time. The closest we come to any definitive research on this question is with Transitional Strategies Instruction, which is portrayed by its developers more as a menu of activities from which a teacher could select than as a subset of strategies most appropriate for a particular story, book, or selection. In terms of research, it would be useful to complement our knowledge of the effectiveness of strategies when they are taught in special units with knowledge of their value added to a comprehension curriculum. Without finding better ways of bringing effective comprehension instruction to classrooms, continued research refining particular comprehension instruction techniques will provide little or no real value.

These difficult questions must be addressed by teachers, teacher educators, and reading researchers. The stakes are too high to leave them unanswered and unaddressed. In the meantime, however, we can take some comfort in the knowledge that for the teacher who wants to work directly with students to help them develop a rich repertoire of effective comprehension strategies, the tools are available. We know a great deal about how to help students become more effective, more strategic, more self-reliant readers. It is time that we put that knowledge to work.

Summary

In this chapter, we have described effective individual and collective strategies for teaching comprehension of text and discussed characteristics of a balanced comprehension program into which such strategies could be embedded. In Figure 10.6, we offer a tool for assessing the comprehension instruction environment in your own classroom. We hope that this will aid readers in identifying both strengths and weaknesses in comprehension instruction as well as serving as a summary of the material presented in this chapter. We hope it will not prove overwhelming, even to those who are novices at comprehension instruction. Realize that the use of even one of the techniques described in this chapter has

Figure 10.6. A checklist for assessing the comprehension environment and instruction in the classroom

About the overall reading program

- How much time do students spend actually reading?
- How much reading do students routinely do in texts other than those written solely for reading or content area instruction?
- Do students have clear and compelling purposes in mind when reading?
- How many different genres are available to students within your classroom? How many students read across genres?
- Do students have multiple opportunities to develop vocabulary and concept knowledge through texts?
  Through discussion of new ideas?
  Through direct instruction in vocabulary and concepts?
- Are students given substantial instruction in the accurate and automatic decoding of words?
- How much time do students spend writing texts for others to comprehend?
  With reading-writing connections emphasized?
- Are students afforded an environment rich in high-quality talk about text?

About comprehension strategy instruction

- Are students taught to...
  _ identify their purpose for reading?
  _ preview texts before reading?
  _ make predictions before and during reading?
  _ activate relevant background knowledge for reading?
  _ think aloud while reading?
  _ use text structure to support comprehension?
  _ create visual representations to aid comprehension and recall?
  _ determine the important ideas in what they read?
  _ summarize what they read?
  _ generate questions for text?
  _ handle unfamiliar words during reading?
  _ monitor their comprehension during reading?
- Does instruction about these strategies include
  _ an explicit description of the strategy and when it should be used?
  _ modeling of the strategy in action?
  _ collaborative use of the strategy in action?
  _ guided practice using the strategy, with gradual release of responsibility?
  _ independent practice using the strategy?

About other teaching considerations

- Are students helped to orchestrate multiple strategies, rather than using only one at a time?
- Are the texts used for instruction carefully chosen to match the strategy and students being taught?
- Is there concern with student motivation to engage in literacy activities and apply strategies learned?
- Are students' comprehension skills assessed on an ongoing basis?

been shown to improve students' comprehension of text. In fact, in the previous edition of this book, Pearson suggested that comprehension instruction is best when it focuses on a few well-taught, well-learned strategies. Although we can now point to a litany of effective techniques, that does not mean that using a litany of techniques will be effective.

Questions for Discussion

1. In this chapter we have argued that there is considerable research on effective comprehension instruction, but that much of this research is not reflected in classroom practice. Based on your experience in schools and classrooms, do you agree? If so, why do you think that this is the case?
2. Comprehension is addressed in a number of commercial reading programs. With respect to comprehension instruction, what would you be looking for in evaluating these programs?
3. Arrange to observe comprehension instruction in a local school and classroom. What do you see as relative strengths and weaknesses of comprehension curriculum and instruction in this classroom?
4. We suggest several challenges for future research on comprehension. Which of these do you believe is most salient and why?

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OTHER RESOURCES

The reference section includes references to many books, chapters, and articles that address specific comprehension strategies and approaches to teaching them. There are also references to several reviews of research. For more comprehensive discussions of comprehension instruction written specifically for teachers, you might consult any of the following recently published books on the topic:

Blachowicz, C., & Ogle, D. (2001). *Reading comprehension: Strategies for independent learners.* New York: Guilford.

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Chapter 11

Reading Comprehension Strategies and Teacher Preparation

Joanna P. Williams

Reading comprehension strategy instruction has been a major research topic for more than 20 years. The idea behind this approach to instruction is that reading comprehension can be improved by teaching students to use specific cognitive strategies or to reason strategically when they encounter barriers to comprehension when reading. The earliest work in this area used a "direct instruction" model in which teachers taught a specific strategy or set of strategies to students. The goal of such training was, as it always is, the achievement of competent and self-regulated reading.

At first, investigators focused on teaching students one strategy at a time. A wide variety of strategies were studied, including imagery, question generating, prediction, and many others. In this approach, teachers usually modeled the cognitive strategy in question, often by "thinking aloud" as they read to demonstrate what proficient readers do. The approach also involved guided practice, in which students were led to the point when they were able to perform independently, by means of a gradual reduction of scaffolding. This type of instruction was effective in helping students acquire the strategy, and usually there was some evidence that the use of the strategy improved performance on reading comprehension tasks. In later studies, several strategies were taught in combination, and these studies showed similar effects. Recommendations to use particular combinations of strategies in actual teaching situations became common.

There are many additional questions that might be raised in regard to the existing literature on single and multiple strategy instruction, and many loose ends. For example, few of the existing studies address issues of long-term maintenance of strategy use. Effects of strategy instruction on real reading tasks (e.g., reading connected text) are not well delineated, and there is little evidence on the issues that one typically pursues after the initial experimental forays into a topic, for example, the optimal age for training, how long training should last, and so on.

However, the pursuit of these sorts of questions within the context of the work already done might not be the most productive focus for future research, because implementation of the direct instruction approach to cognitive strategy instruction in the context of the actual classroom has proved problematic. For one thing, it is often difficult to communicate what is meant by "teaching strategies and not skills." Several papers have been written whose purpose is to explicate exactly *how* teachers are taught to become teachers of comprehension strategies, and it appears that a significant challenge in training teachers arises from the difficulty of describing what is required of them. In addition, acquiring and practicing individual strategies in isolation and then attempting to provide transfer opportunities during the reading of connected text makes for rigid and awkward instruction.

Proficient reading involves much more than using individual strategies; it involves a constant, ongoing adaptation of many cognitive processes. To help develop these processes in their students, teachers must be skillful in their instruction. Indeed, successful teachers of reading comprehension must respond flexibly and opportunistically to students' needs for instructive feedback as they read. To be able to do this, teachers must themselves have a firm grasp not only of the strategies that they are teaching the children but also of *instructional* strategies that they can employ to achieve their goal. Many teachers find this type of teaching a challenge, most likely because they have not been prepared to do it. Thus, although the literature on cognitive strategy instruction for reading comprehension has yielded valuable information, it has not provided a completely satisfactory model for effective instruction as it occurs in the classroom.

The area within comprehension strategy instruction that seems to have the most potential for moving the field along is teacher preparation. In this chapter, I discuss four studies in which teachers are trained to teach strategies and in which the focus is on the effectiveness of that training on students' reading. Four studies is not a large number, but it is not surprising that only a few relevant studies have been done. Interest in the topic is rather new, and preparing teachers to deliver effective strategy instruction is a lengthy process.

Selection of Articles

The ERIC and PsychLit databases were searched to locate relevant studies conducted since 1980. The search terms used were *comprehension, strategy*, and *instruction*; there were 453 articles. In addition, a search was done using the terms *direct explanation* and *teacher explanation*; this added 182 nonoverlapping items. In addition, recent research reviews were examined: Pressley (1998), Pressley, Lysynchuk, d'Ailly, Smith, and Cake (1989), Rosenshine and Meister (1994), and Rosenshine, Meister, and Chapman (1996). These reviews did not reveal any relevant studies that the searches had not revealed.

Four studies were selected because they met the following criteria:

- focused on the preparation of teachers for conducting reading comprehension strategy instruction
- published in a scientific journal
- empirical
- experimental, using random assignment, or quasi-experimental with initial matching on the basis of reading comprehension scores
- reported the complete set of results of the study

Ancillary articles that focused on specific aspects of the same database were not included but are in the For Further Reading list at the end of this chapter.

The Studies

The results of the selected studies suggest that, in fact, good teacher preparation can result in the delivery of instruction that leads to improvements in students' reading comprehension. However, the variations among the studies raise questions about what might be the best approach to teaching teachers to do strategy instruction.

There have been two major approaches to comprehension strategy instruction: Direct Explanation and Transactional Strategy Instruction. Two studies that represent each approach are described. Table 11.1 presents an overview of some of the specific characteristics of each study.

Direct Explanation

The Direct Explanation (DE) approach was designed to improve on the standard direct instruction approach to strategy instruction used in

Table 11.1. Specific characteristics of the studies

		Duffy et al. 1986	Duffy et al. 1987	Anderson 1992	Brown et al. 1996
Teachers	n	11E + 11C	10E + 10C	9E + 7C	5E + 5C
	Randomized?	Yes	Yes	Yes	No
Students	n	c. 260	148	83	60
	Grade	5	3	6–11	2
	Reading level	Low	Low	Disabled	Low
Duration of study		1 year	1 year	3 months	1 year
Experimental	Training	DE	DE	TSI	(TSI)
	Duration	12 hours	12 hours	9 hours	
Control	Training	Classroom management	Classroom management	None	(None)
	Duration	1 session	6 hours		

E = experimental; C = control; DE = direct explanation; TSI = transactional strategy instruction.

most of the early studies, in which students are simply taught to use one or several strategies as described earlier. Arguing that direct instruction was insufficient because it did not attempt to provide students with an understanding of the reasoning and mental processes involved in reading strategically, Gerald Duffy and Laura Roehler developed the DE approach. In this approach, teachers do not teach individual strategies, but focus instead on helping students to (a) view reading as a problem-solving task that necessitates the use of strategic thinking and (b) learn to think strategically about solving reading comprehension problems. The focus in DE is on developing teachers' ability to explain the reasoning and mental processes involved in successful reading comprehension in an explicit manner, hence the use of the term *direct explanation*. The implementation of DE requires specific and intensive teacher training on how to teach the traditional reading comprehension skills found in basal readers *as strategies*, that is, to teach students the skill of how to find the main idea by casting it as a problem-solving task and reasoning about it strategically.

The first study done by Duffy and Roehler's research team (Duffy et al., 1986) investigated whether training teachers to be explicit in their teaching of reading strategies would be effective in increasing the explicitness of their verbal explanations, and whether this explicitness would be related to students' metacognitive awareness of strategies and to their achievement. Twenty-two teachers were randomly assigned to either the treatment or the control condition. Treatment teachers were trained to use an explanation model that was designed to help them explain reading strategies explicitly to their fifth-grade low-group reading students. After an initial training session, the treatment teachers received 10 hours of additional training spaced throughout the school year. During these training sessions, the explanation model was described and teachers designed lessons according to the model. Their teaching was observed and discussed on four occasions. Control teachers participated in a workshop on classroom management at the start of the study and received no further training. The results of this study indicated that students of teachers who received training in the use of the explanation model had significantly greater awareness of (a) what strategies were taught, (b) why they are important, and (c) how they are used than did students of the comparison teachers.

The Duffy et al. (1986) study thus demonstrated the effectiveness of training teachers, and it showed that explicit explanations by teachers can lead to students having greater general awareness of reading strategies. However, the question of the extent to which students were able to apply these strategies and ways of thinking to their actual reading practice, that is, whether the use of such methods leads to significant improvements in reading comprehension performance, was not answered positively. The treatment and the comparison classrooms did not differ on the posttest administration of the comprehension subtest of the Gates-MacGinitie Test.

Duffy and his colleagues did find, however, that students of the treatment teachers spent significantly more time answering the items on the comprehension test than did the other students. This suggested to them that perhaps these students were being more thoughtful and strategic in their reading.

There is little point in adapting new teaching methods if they are not shown to be effective in improving actual performance. Therefore, the Duffy et al. (1986) study cannot be considered conclusive regarding the value of training teachers to provide explicit explanations about how to read strategically. However, the results were promising enough to persuade the same research team to undertake another study, similar to the

1986 study in many respects, but incorporating a more elaborate program of teacher preparation.

In the Duffy et al. (1987) study, as in the 1986 study, there was random assignment of teachers to condition. Treatment teachers were shown how to provide explicit explanations, in this case to third-grade low-level reading students. In addition, the teachers were trained to analyze the skills prescribed in their basal reading texts and to recast these skills as problem-solving strategies. In essence, the emphasis in this study was on the effects of training teachers to provide students with explicit descriptive information about the types of reasoning and mental processes that are used strategically by skilled readers, as opposed to simple prescriptions of how to perform the basal text skills. Twelve hours of training included one-on-one coaching, collaborative sharing between the teachers, observation of lessons and feedback, and videotaped model lessons. Comparison teachers were trained in classroom management and used management principles throughout the study.

The effectiveness of this approach was measured in terms of both student awareness and student achievement. Student awareness of strategic reasoning was assessed in interviews conducted both immediately following lessons as well as at the end of the yearlong treatment. As in the Duffy et al. (1986) study, the results indicated that, compared with students of untrained teachers, the students of trained teachers had higher levels of awareness of specific reading strategies, as well as a greater awareness of the need to be strategic when reading.

However, the fact that students have high awareness of the reasoning associated with strategic reading does not necessarily mean that they are proficient in using such strategies and better in reading comprehension. Duffy et al. (1987) designed an achievement measure to assess both students' ability to use the basal skills they had been taught and the degree to which their responses reflected the reasoning associated with using skills as strategies. Results indicated that there was no difference between students of treatment and control teachers in the ability to use the skills. However, the students of treatment teachers were found to have a greater ability to reason strategically when reading. Results on a task involving paragraph reading also indicated that students of treatment teachers (a) reported that they used such reasoning when actually reading connected text and (b) described the reasoning employed when using the strategies. In contrast, students of control teachers were unable to do so.

Duffy et al. (1987) also used standardized measures to assess students' reading performance. The comprehension and word skills subtests of the Stanford Achievement Test were used. Overall, students of the treatment teachers outperformed the students of the control teachers on the posttest. This difference was significant for the word skills subtest, but was not significant for the comprehension subtest. A second standardized test, the Michigan Educational Assessment Program, was administered as a delayed posttest to assess whether the overall advantage of students of treatment teachers persisted over time. Indeed, it was found that even 5 months after the instruction ended, students of the trained teachers had significantly higher reading scores than students of the control teachers.

The results of these two investigations of the DE approach to comprehension strategy instruction suggest that although this approach is clearly useful for increasing student awareness of the need to think strategically while reading, the effects on actual reading comprehension ability are less clear-cut. As noted earlier, both of the Duffy et al. studies produced only mixed results on the standardized measures of reading performance. It should be noted, however, that Duffy et al. (1987) reported that many of their lessons were oriented toward acquisition of word-level processes and not to what we usually consider comprehension processes.

Transactional Strategy Instruction

The Transactional Strategy Instruction (TSI) approach includes the same key elements as the Direct Explanation approach, but it takes a somewhat different view of the role of the teacher in strategy instruction. Although the emphasis in DE is on teachers' ability to provide explicit explanations, the TSI approach focuses not only on that but also on the ability of teachers to facilitate discussions in which students (a) collaborate to form joint interpretations of text and (b) explicitly discuss the mental processes and cognitive strategies that are involved in comprehension. In other words, although TSI teachers do provide their students with explicit explanations of strategic mental processes used in reading, the emphasis is on the interactive exchange between learners in the classroom, hence the use of the term *transactional.*

In both DE and TSI, teachers explain specific strategies to students and model the reasoning associated with their use. Both approaches include the use of systematic practice of new skills, as well as scaffolded support, in which teachers gradually withdraw the amount of assistance they offer to students. Perhaps the most salient distinction to be made between DE and TSI is the manner in which the different emphases of the two approaches (explanation vs. discussion) result in differences in the level of collaboration between students that takes place in each approach. In the DE approach, strategy instruction is conducted primarily by the teacher. The TSI approach is more collaborative; although explicit teacher explanation is an important part of this approach, TSI is designed for learning to occur primarily through the interactive transactions among the students during classroom discussion.

Anderson (1992) worked with experienced teachers of severely reading-disabled adolescent students. The students ranged from grade 6 through 11, but three quarters of them had incoming reading levels of grade 3 or below. The teachers were randomly assigned to a treatment or control condition. The nine treatment teachers received three 3-hour sessions of training in the use of the TSI approach, held at intervals during the period during which the actual reading intervention with the students was taking place. Special features of Anderson's teacher preparation included (a) the involvement of the teachers as coresearchers who were part of the development of the project and (b) the availability of a previously trained peer coach for each teacher throughout the project.

In their training, the teachers were given a list of changes, or "shifts," that needed to be made in most classrooms for more active reading to be fostered. This list of 20 teacher shifts and 12 student shifts first described ways in which teachers and students typically behave during remedial reading instruction, and then described contrasting behaviors that characterize or promote active reading. The teachers were also given a set of principles for fostering active reading through reading instruction, with specific teaching techniques for each principle. Each treatment teacher also was assigned a previously trained teacher for peer support. There were seven comparison teachers, who received no training.

In the intervention, both teacher groups taught reading comprehension for 3 months using expository texts. The instruction in treatment classrooms emphasized both direct explanation and collaborative discussion. To evaluate the effects of the TSI approach, teachers were videotaped conducting classroom lessons both at the beginning and at the end of the intervention. Treatment teachers were judged to have made significant improvements, compared with control teachers, on all 14 of the teacher shifts that were assessed. Students of treatment teachers were judged to have made significant improvements, compared with students of control teachers, on all eight of the student shifts that were assessed. These student shifts (e.g., treating reading problems openly, focusing on how to solve problems, and asking questions) can be considered indications of strategy usage.

In addition, the phonics, structural analysis, and reading comprehension subtests of the Stanford Diagnostic Reading Test were administered. There was no difference from pretest to posttest in the performance of students of the trained and untrained teachers on the phonics and structural analysis subtests. However, significantly more students of the trained teachers (80%) made gains on the reading comprehension subtest than did students of the other teachers (50%), suggesting that the preparation given to the teachers was effective in improving reading comprehension performance. The amount of gain was not reported.

Over the past decade, Michael Pressley and his associates have developed a transactional strategy instruction program called Students Achieving Independent Learning (SAIL). In SAIL, reading processes are taught as strategies through direct explanation, teacher modeling, coaching, and scaffolded practice. An important feature of the program is its emphasis on collaborative discussion between teacher and students, including extended interpretive discussions of text, with these discussions emphasizing student application of strategies. A goal of the SAIL program is for students to develop more personalized and integrative understanding of text.

A yearlong study by Brown, Pressley, Van Meter, and Schuder (1996) provides evidence of the effectiveness of the TSI approach as exemplified by the SAIL program. In this study, SAIL was contrasted with a more traditional approach to reading instruction. There was no specific teacher preparation within the context of this study; the five SAIL teachers had all been previously trained and had at least 3 years of experience as SAIL teachers. The five comparison teachers had more years of teaching experience than the SAIL teachers, but they had no SAIL training. The students in this study were in second grade; all were reading below grade level at the beginning of the study.

The SAIL teachers and the comparison teachers were matched on a variety of measures to form five pairs. In each pair of classrooms, data were collected on six low-achieving students from each classroom and the students were matched on the basis of their reading comprehension scores. Thus, Brown et al. (1996) did the careful matching required when doing a quasi-experiment.

Students' strategy awareness was assessed through interviews. Students of SAIL teachers reported more awareness of comprehension and word-level strategies than did students of comparison teachers (operationalized as the number of strategies they claimed to use during reading). In an evaluation of story recall, the SAIL students did better on literal recall of story content and also were more interpretive in their recalls. On a think-aloud task, SAIL students used more strategies on their own than did the other students. Student reading achievement also was assessed, using the comprehension and word skills subtests of the Stanford Achievement Test. Over the course of the study, students of the SAIL teachers showed greater improvement than the students of the comparison teachers, and at posttest, they significantly outperformed the comparison students on both subtests.

Summary

Each of these studies reported significant differences between the treatment and the comparison conditions, and although none of them reported effect sizes, they provided enough information so that effect sizes could be calculated for most of the effects. Table 11.2 presents a summary

Table 11.2. Effect sizes

Measure	Duffy et al. 1986	Duffy et al. 1987	Anderson 1992	Brown et al. 1996
Teachers' effectiveness	2.11	1.67	2.92(14)	W: 1.38 C: 5.48
Students				
Strategy awareness	1.39	1.43(4)	X	W: 1.38 C: 4.03
Strategy usage	X	2.73(3)	2.62(8)	2.98
Reading achievement				
Standardized tests	C: 0.24	W: 1.63 C: 0.25 D: 1.33	W: n.d. C: A	W: 1.67 C: 1.70
Experimenters' tests	X	-0.21	X	1.04

Numbers within parentheses indicate number of effect sizes averaged. X = not measured; W = word-level skills; C = comprehension skills; D = delayed; n.d. = no difference; A = effect size could not be calculated; in this instance, 80% of the students of the experimental teachers made gains, versus 50% of the students of the control teachers.

of the effect sizes. They were substantial, suggesting that these initial attempts to provide effective instruction for teachers in reading comprehension strategy training are promising and worth following up.

It is encouraging to see that random assignment is feasible in real-life classroom situations. This statement is not intended as a criticism of Brown et al.'s (1996) quasi-experiment, which was done carefully and, in fact, posed a question that could not be tested in a true experiment: What is the effect of a particular model of instruction (TSI) delivered by teachers experienced and committed to it, working in the context of schools also committed to that approach? This is an important question. However, most of the relevant research questions do not demand a quasi-experimental design, and therefore a much better choice would be a true experiment. Sometimes researchers argue that school administrators refuse to allow random assignment because it disrupts their school. However, they should make serious and sincere efforts to find schools that *will* cooperate, because they do exist; researchers should also help the field by making an effort to educate school administrators about random assignment and other important design standards.

These comments should not be taken to imply that it is easy to do classroom-based naturalistic studies of the type discussed in this chapter. It is difficult, and the difficulty should not be minimized. Such research cannot be undertaken without substantial funding and adequate institutional support. It also requires collaboration between researchers, school personnel—including both teachers and administrators—and parents, which does not come about quickly, but rather requires time and effort. Furthermore, doing this type of research takes commitment and energy on the part of the research team; the researchers must remain motivated and effective during a lengthy developmental phase and then during the study itself. Moreover, a high-quality study of this type has probably been preceded by descriptive and correlational work. The emphasis in this chapter on the importance of experimental studies should not be interpreted as negating the valuable contributions of these other research paradigms in preparing to do intervention research.

Of course, any evaluation of these instructional approaches is limited because these studies cannot easily be compared. They differed in terms of specific purpose, teacher preparation method, intervention, type of student (age, reading level, etc.), control group, and other characteristics. Nevertheless, taken together, the studies do indicate that instructional methods that generate high levels of student involvement and engagement during reading can have positive effects on reading comprehension. The classroom procedures in each of the studies required substantial cognitive activity on the part of the students. Also, these studies demonstrate that providing teachers with instruction that helps them to use such methods leads to students' awareness of strategies and use of strategies, which can in turn lead to improved reading comprehension.

These findings raise the question as to what it is, in fact, that makes for effective strategy instruction. Is it the teacher preparation? (If so, how extensive does it have to be? Would the teachers maintain their instructional effectiveness without the supports inherent in an ongoing study?) Is it the use of direct explanation and/or collaborative discussion when teaching students? Is it the particular strategies that are taught, or would a broader repertoire of instructional activities also be effective? Is it a combination of some or all of these possibilities, or of other factors not mentioned here? Clearly, more research is warranted on this topic. In light of the findings to date, we can expect that further work in this area will be fruitful in yielding valuable knowledge concerning optimal conditions for improvement in reading comprehension.

Further work also should address a broader issue. One cannot teach reading strategies in the absence of reading content. Research on strategy instruction does not focus on content, but rather on comprehension processes that presumably can be generalized across a variety of content areas. One could argue, however, that the main focus of instruction ought to be on content instead of strategies, and that instruction that focuses on a specific topic, for example, the American Revolution, will not only promote comprehension of that topic but also help students comprehend similar topics. However, to be effective, such instruction must ensure that the content is presented and students read the texts in ways that emphasize deep understanding and critical thinking, and that implies some attention to strategies.

The fact that content and strategies are fundamentally intertwined makes this a difficult issue to study, but the question is important. Certainly content plays a larger role in comprehension than is suggested by the limited amount of attention it has received lately. In fact, it may well turn out that the long-term contribution of our recent strategy research, including the work on preparing teachers to teach strategies, will not be to endorse comprehension strategies as an independent topic of instruction. Rather, the strategies we find to be successful may be incorporated into curriculum areas such as social studies and science.

The results of the research to date represent significant progress in our understanding of the nature of reading comprehension and of how to teach it. There is much more to learn, of course. We must remember that reading comprehension is extremely complex and that teaching reading comprehension is also extremely complex. This is clear from the work discussed in this chapter. These researchers have not recommended an "instructional package" that can be prescribed for all students. They have not identified a specific set of instructional procedures for teachers to follow routinely. Indeed, they have found that reading comprehension instruction cannot be routinized.

What they have shown—and this is an important new direction in which to take our research efforts—is that intensive instruction of teachers can prepare them to teach reading comprehension strategically and that such teaching can lead students to greater awareness of what it means to be a strategic reader and to the goal of improved comprehension.

Conclusions

1. The most active topic in the research on comprehension instruction over the last few years has been comprehension strategies.
2. Teaching strategies for reading comprehension leads to increased awareness and use of the strategies, to improved performance on commonly used comprehension measures, and, sometimes, to higher scores on standardized tests of reading.
3. For further progress to be made, we need research that is focused on ways to teach strategies within the natural setting of the classroom. Work of this type is enhanced when cognitive researchers collaborate with researchers knowledgeable about teacher education.
4. Teachers can be taught to teach comprehension strategies effectively; after such instruction, their proficiency is greater, and this leads to improved performance on the part of their students on awareness and use of the strategies, to improved performance on commonly used comprehension measures, and, sometimes, to higher scores on standardized reading tests.
5. Teaching comprehension strategies effectively in the natural setting of the classroom involves a level of proficiency and flexibility that often requires substantial and intensive teacher preparation.

Implications for Practice

1. General guidelines for teachers that derive from the research evidence on comprehension instruction include the suggestions that teachers help students by explaining fully what it is they are teaching—what to do, why, how, and when; by modeling their own thinking processes; by encouraging students to ask questions and discuss possible answers among themselves; and by keeping students engaged in their reading by means of providing tasks that demand active involvement. The current dearth of comprehension instruction research at the primary grade level should not lead to the conclusion that such instruction should be neglected during the important period when children are mastering phonics and word recognition and developing reading fluency.
2. In evaluating the effectiveness of strategy instruction in the classroom, the primary focus must not be on the students' performance of the strategies themselves. The appropriate assessment is of the students' reading achievement, and, in addition, other outcome measures such as how interested students are in reading and how satisfied teachers are with their instructional methods.
3. Implementation of effective comprehension instruction is not a simple matter; substantial teacher preparation is usually required for teachers to become successful at teaching comprehension.
4. There is a need for greater emphasis in teacher education on the teaching of reading comprehension. Such instruction should begin at the preservice level, and it should be extensive, especially with respect to teaching teachers how to teach comprehension strategies.

Unanswered Questions About Comprehension Strategy Instruction

Maintenance and transfer:

1. Does teaching comprehension strategies have lasting effects on students?
2. Do the effects generalize to other reading situations, such as content area instruction?
3. Can comprehension instruction be done successfully within the context of content area instruction?

Teacher preparation:

1. How much teacher preparation is required for successful performance?
2. How should teacher preparation be conducted at the preservice level and at the inservice level?
3. Can teachers maintain their proficiency after their own preparation to teach comprehension has been completed?
4. Does the fact that teachers are involved in an ongoing research study make a difference in their performance?

Other important concerns:

1. Teacher characteristics: How does a teacher's age, amount of teaching experience, type of preservice education, or other characteristics affect success in comprehension instruction? Which components of successful teacher preparation programs are the effective ones? What characteristics of the teacher preparation itself (its focus, its intensity, its timing) affect the success of a teacher preparation program?
2. Reader characteristics: How does a student's age, reading level, learning disability status, proficiency in English, or other characteristics affect success in comprehension instruction?
3. Text characteristics: Does the difficulty level of the texts used in instruction make a difference? Can one expect transfer from one text genre to another (e.g., from narrative to expository text)?
4. Task characteristics: What characteristics of the instruction delivered to the students are the effective ones? The direct explanation? The collaborative discussion? The particular strategies and tasks taught to the students? The amount of instruction? The active involvement on the part of the students? Other factors?

Questions for Discussion

1. Interview a professor in a curriculum and teaching department in a local college of education. What instructional strategies are being used in their teacher education? How are current recommendations being implemented in that college? If they are not being implemented, what are the reasons for not implementing them?
2. Why must teachers go through extensive preparation to be able to teach reading comprehension successfully?

3. What is the difference between the two teacher preparation approaches described in this chapter, Direct Explanation and Transactional Strategy Instruction? In your opinion, is one of these approaches more promising than the other? Why or why not?

4. Would it be a good idea to teach listening comprehension by means of an approach similar to that used to teach reading comprehension? Why or why not?

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Chapter 12

Research on Reading/Learning Disability Interventions

Richard L. Allington

Recent educational reforms have muddied the waters when it comes to considering the conceptualization of reading and learning difficulties. Various recent proposals and actions seem to substantially expand the numbers of children deemed to be making unsatisfactory progress in developing reading proficiency. Observe the political rhetoric—all children reading on grade level by grade 4—and recent legislative mandates—establishing grade-level reading achievement standards for promotion to the next grade. Even taking into account the richness of political rhetoric, such reform goals represent a substantial shift in educational policy. For most of the 20th century it was expected that half of children would, necessarily, read at some level below "grade level," whereas half would read above "grade level." This was, of course, the result of defining "grade level" psychometrically as the average achievement of the children in any given grade. With grade level defined as the average performance, getting everyone on or above grade level means getting everyone on or above average—a mathematical impossibility. Nonetheless, legislative calls for all children reading on grade level abound. So how is it that so many policymakers seem not to understand the fundamental flaw in their proposals? What implications will such proposals have for the traditional conceptualizations of reading difficulties?

Basic to understanding the current confusion about achievement levels is the history of the National Assessment of Educational Progress (NAEP) and the shift in reporting NAEP achievement from a *relative standard*—how students performed on an administration of the test relative to their performance on previous administrations—to reporting achievement of an *absolute* standard—how many students achieve a particular level of performance set a priori as the desired achievement level. Thus, the reports of NAEP performance have moved from generally positive during the early years of the assessment program—students are reading better than they used to—to largely negative reports more recently—too few students meet the established absolute standard.

However, the NAEP performances show no absolute decline in reading achievement across its 30-year history (Snow, Burns, & Griffin, 1998). In fact, at grade 4, reading achievement is at an all-time high, with a pattern of steady gains in achievement since 1990 (Hoff & Manzo, 1999). Still, about 40% of all fourth-grade students are reported having reading achievement that fell below the "basic" level of desired performance (the "basic" level is a predetermined absolute performance level). This suggests that the absolute standard set for the NAEP "basic" achievement level closely approximates what had been "grade level" achievement for most of the 20th century. That is, with a little more than half the students above and a little less than half below the "basic" level, that level seems to represent something similar to the average achievement level that had been the relative standard for most of the 20th century. Whether the average achievement of fourth graders on the NAEP is too low or whether the NAEP absolute standard is too high is a political question, not a research issue, per se. However, U.S. fourth graders ranked among the best readers in the world in the most recent international assessments of reading proficiency (Elley, 1992). This performance suggests that, at least compared with the international competition, U.S. elementary schools are producing children who read reasonably well (although the U.S. student ranking declines steadily after fourth grade).

This seems necessary as an introduction to any chapter on research into reading difficulties, because the media and the political discourse often suggests that large numbers of U.S. children are failing to learn to read (e.g., Sweet, 1997). However, the accumulated evidence indicates a very different situation (Berliner & Biddle, 1996; Rothstein, 1998), at least when considered in historic, relative terms. At the same time, setting the new absolute NAEP "basic" standard at a level achieved by little more than half the students and setting the "proficient" standard at a level currently achieved by roughly one quarter of U.S. students created both an impression that U.S. students are not achieving at sufficiently high levels and the possibility that many more children might be identified as experiencing difficulties in reading acquisition. The use of new and higher standards of adequacy and the practice of attaching high stakes to those standards (e.g., retention in grade for those failing to achieve the standard, mandating summer school programs for such children, limiting local control when many children fall below the standard, etc.) will undoubtedly influence how reading difficulties are conceived and, possibly, redefined.

That said, it seems obvious that many U.S. children do experience difficulty learning to read and that too few educational agencies have developed intervention plans that reflect much of what we have learned about teaching all children to read. In addition, the children most likely to make unsatisfactory progress in acquiring reading proficiency are too predictable. It is the children of poverty whose reading achievement is most often deemed unacceptably low (Entwisle, Alexander, & Olson, 1997). Because minority children are overrepresented among the poor (Wagner, 1995), far too many minority children struggle with literacy acquisition. However, explanations of reading difficulties have moved away from a focus on economic disadvantage.

Today, traditional reading difficulties have largely been redefined as *learning disabilities*. McGill-Franzen (1987) traced this redefining. She noted that with the passage of the Education of Handicapped Children Act in 1975 there appeared a steady increase in the publication of articles on reading difficulties in special education journals (e.g., *Journal of Learning Disabilities*) and a decline in the publication of such articles in reading journals (e.g., *The Reading Teacher*). Likewise, there was a parallel shift of children from remedial reading programs into special education—learning disability—programs and a shift in federal teacher preparation funding from reading teacher preparation to the preparation of special education teachers. In McGill-Franzen's view, the decade between 1975 and 1985 produced a redefinition of the locus of reading difficulties from an emphasis on economic disadvantage to one emphasizing reading difficulties as individual disability. The recent prominence of learning disability and dyslexia research (Lyon & Moats, 1997), especially that funded by the National Institute of Child Health and Human Development (NICHD), in federal and state legislative activity suggests McGill-Franzen was prescient in her earlier observations.

Linked to this reconceptualization were the incentives that were created for redefining reading difficulties as a disability. First, there was the fiscal incentive. As U.S. federal funding for remedial reading programs (e.g., Title I) declined in real dollars, there was an increasing allocation of funding for special education programs. In addition, federal program regulations only made children eligible for remedial services but did not mandate such services (nor mandate state funding for them). In contrast, identification of children as learning disabled created an entitlement for special educational services and mandated funding of those services (McGill-Franzen & Goatley, 2001). Second, identifying children experiencing difficulties as learning disabled routinely exempted them from participating in the new state educational accountability schemes.

Therefore, although children participating in remedial reading programs took state reading tests and had their results included in the reports of school achievement patterns, the performances of children identified as learning disabled typically were not included. Schools intent on demonstrating improved reading achievement could and often did (Allington & McGill-Franzen, 1992; McGill-Franzen, 1994) identify larger numbers of lower achieving children as learning disabled and then reported higher reading achievement levels, a manufactured improvement resulting from the exclusion of the performances of low-achieving children identified as learning disabled. This issue is again appearing on the U.S. political agenda as recent reports of improved performance by some states on the NAEP were followed by reports of substantial increases in the number of low-achieving children exempted from that assessment (Hoff, 1999). However, Congress recently legislated inclusion of students with disabilities on such assessments and states are now implementing the necessary policies and procedures (Heubert & Hauser, 1999).

The result of the redefinition of reading difficulties as learning disabilities also can be seen in the professional consensus that most children identified as learning disabled are children who experience difficulty in acquiring reading and writing proficiencies (Allington & McGill-Franzen, 1996; Lyon & Moats, 1997). Although remedial reading programs still exist, the substantial expansion in the numbers of students identified as learning disabled over the past 30 years (from 120,000 in 1968 to 2.7 million in 1997 [Sack, 1999]) indicates that children experiencing difficulties in reading acquisition are now routinely identified as learning disabled and served in special education programs.

Therefore, two problems arise in considering the issues involved in discussing reading/learning disabilities. First, given the new standards, which students should be considered to be experiencing reading difficulties? Which students exhibit learning disabilities? Second, because none of the research currently available has benchmarked student performance against the new standards, what research can be useful in considering the design of effective interventions?

Who Is Reading/Learning Disabled?

Historically, reading achievement had to lag substantively behind what was considered a "normal" pace of reading acquisition for a reading difficulty to be identified. Various schemes were proposed and implemented over the years for identifying which children were considered candidates for intervention (Harris & Sipay, 1990). In the simplest of schemes, some arbitrary cutoff level of performance was established (e.g., 27th percentile on an achievement test, more than a year behind peers) or identification was simply by teacher referral. There also were more complicated schemes, which involved attempting to estimate whether a discrepancy existed between aptitude and achievement (e.g., use measured estimate of intelligence to predict appropriate level of achievement and compare with measured achievement) or whether certain diagnostic symptoms were present (e.g., visual perceptual difficulties, letter or word reversals). However, many studies identified significant psychometric limitations of such schemes (e.g., Stanovich, 1991; Stanovich & Siegel, 1994).

More recently there has been a significant trend away from such details as the emphasis of intervention has shifted to whole-school models and in-class support services (LeTendre, 1991). In the former, programs are designed to enhance and intensify instruction across the school, for all children, rather than provide instructional support for a minority of targeted children. In the latter, instructional support services have been provided in the general education classroom in an attempt to better coordinate such services with the core instructional plan and to foster collaboration between classroom teachers and specialist teachers (Sindelar & Kilgore, 1996; Winfield, 1995). Nonetheless, there remains the problematic issue of deciding who is experiencing sufficient difficulty in learning to read to warrant some extraordinary instructional support (e.g., tutorials, small-group supplemental instruction, extended instructional time programs).

Consider, for instance, that a number of states are currently implementing promotional gates. That is, in these cases any student whose achievement fails to attain an absolute standard will be retained in grade. Now imagine that currently fewer than half the students achieve this standard. Would all students whose achievement falls below the standard be considered to be experiencing difficulties in reading acquisition? Would all qualify for extraordinary instructional support? Would they be considered reading disabled? Learning disabled? Given the high stakes (grade promotion) attached to achieving the new standards, what rationale might be developed for not providing extraordinary instructional support for those students failing to meet the standard? Should 50% of U.S. students qualify for remedial reading services?

The recent political emphasis on all students achieving at a new, higher standard of reading proficiency therefore seems to produce new definitional issues that simply pile on top of the perennial definitional issues, which have yet to be resolved. For instance, there has never been a universally accepted definition of reading disability. There has been no unified scheme for identifying which children will receive remedial support services.

Much the same can be said for the identification of children as learning disabled. Again, there is no commonly accepted operational definition of a learning disability. This issue is not new, and it has plagued the profession since the first learning disability programs were founded. More than a quarter-century ago, Kirk and Elkins (1975) studied the characteristics of students identified as learning disabled in federally funded child service demonstration centers. Using the federal definition of specific learning disabilities as their benchmark, they noted,

> It would appear from the data that the majority of children in the projects, although underachieving to some degree, would not qualify as specific learning disabled children since (a) many of the children were retarded equally in reading, spelling, and mathematics and were, therefore, not specific but general in academic retardation and (b) a substantial proportion were minor or moderate in their degree of underachievement. (p. 636)

They also noted that remedial and corrective reading was the type of disability that most states considered to comprise "learning disabilities" (p. 633).

Years later, Chalfant (1989) noted the annual increases in the numbers of children being inappropriately identified as learning disabled (even at a time when school enrollments were dropping) and pointed to the definitional difficulties as a primary factor in this increase:

> Decisions for eligibility are often based on a student's need for some kind of special help rather than on whether or not the student meets rigorous eligibility criteria for learning disabilities services. (p. 395)

Chalfant recommended capping learning disability enrollments at 2% of school enrollment (although he noted such a cap would be vigorously opposed by many interests).

More recently, Mercer, Jordan, Allsop, and Mercer (1996) reported little evidence that state definitions of learning disabilities reflected current research. This continuing difficulty of definition was noted in the preface to an edited volume from a NICHD conference on learning disabilities:

> If we are to ultimately understand learning disabilities from a scientific and clinical perspective, the field must undertake a systematic effort to establish a precise definition for the disorder and a theoretically based classification system that is open to empirical scrutiny.... The development of a reliable and valid definition and classification system for learning disabilities is the most pressing scientific goal currently facing the field. (Lyons, Gray, Kavanagh, & Krasgegor, 1993, p. xvii)

Unfortunately, achieving such a goal will be difficult, if not impossible, for several reasons.

Consider that both *reading* and *learning* disabilities are largely socially constructed (McGill-Franzen, 1987; Mehan, Hertweck, & Meihls, 1986; Sleeter, 1986; Taylor, 1998). That is, both terms exist only in certain societies—literate societies—and that definitions of each have historically varied both within the profession and within schools. The concept of reading/learning difficulties only emerges after societies have developed to the point that schooling is nearly universal. When access to schooling is largely restricted, illiteracy is common and even expected. As school attendance becomes more common in a society, expectations about literacy learning and the demands for literacy then increase and schools begin to identify children having difficulty in learning to read (Allington, 1994). Once a society provides a number of years of schooling for virtually all students, as is common in economically developed nations, it is the young adult who cannot read who is in the minority. Once illiteracy is deemed abnormal, not common, it typically takes on negative connotations and societies begin to attempt to explain the abnormality.

This phenomenon operates in U.S. schools. In schools with high relative achievement (above the national norms), usually schools located in relatively economically advantaged neighborhoods, reading just below grade level can qualify a student for remedial services and for diagnostic testing designed to locate the etiology of the "difficulty." However, in a nearby school, but one in a far less advantaged community, reading well below grade level will not likely lead to remedial services nor will there be much evidence of a concern for the etiology of the reading "problem," if only because reading below grade level is common in too many schools that enroll mostly children from poor families.

For instance, for all the popularity of the Success for All (SFA) program in urban schools serving children from poor families, most children attending SFA schools exit fifth grade reading substantially below grade level. Venezky (1998) reanalyzed achievement data from five high-poverty SFA schools in Baltimore, Maryland, USA. He noted that although there were substantive effects for SFA on K–1 achievement, students in these schools slipped steadily behind expectations beyond that point. For instance, 87.5% of the SFA students were reading below grade level at the end of fifth grade, and 30% were 3 or more years below expected achievement. Across the five SFA schools studied, the average end of fifth-grade Iowa Test of Basic Skills (ITBS) reading achievement was the 3.5 grade level—roughly 2.5 years behind grade level.

Consider that using a definition of reading disability that targeted every child below grade level for remedial services would mean that in these SFA schools, seven of every eight fifth-grade students would qualify for remediation. Using the most common achievement-based definitions of learning disabilities would mean that roughly one third of the SFA students would be eligible for that designation (all students below 2.9 achievement level—the 50% discrepancy between grade placement and achievement). However, are all low achievers actually reading/learning disabled?

An enduring definitional difficulty has been the inability to reliably sort children with a learning disability from children who are experiencing difficulties with reading acquisition but have no learning disability (Spear-Swerling & Sternberg, 1996). Today, the situation is such that almost any child experiencing difficulty in reading could be labeled learning disabled (although the earlier quote from Kirk and Elkins [1975] suggests this has been a longstanding problem). After more than a quarter-century there is still no reliable psychometric instrument, battery, or process to identify which children might be learning disabled (Allington & McGill-Franzen, 1996). An abundance of research, however, indicates that reading difficulties can stem from many sources (Harris & Sipay, 1990; Johnston, 1997; Robinson, 1946)—perhaps, although rarely, even a neurologic basis—but most children experiencing such difficulties can have their reading development accelerated when they have access to sufficient appropriate instruction. Unfortunately, identifying children as reading/learning disabled has not reliably increased their access to such instruction.

Although there seem to be no national data on achievement patterns among learning disabled students in the United States (Gartner & Lipsky, 1987), the various state reports available suggest that the situation in New York state is typical. There, fewer than one third of children with disabilities took the state competency exams and fewer than one third of those who did achieved the minimum achievement levels set by the state (a level at third grade that requires a first-grade reading ability) (New York State United Teachers, 1997). This suggests that very few learning disabled students served in current programs are developing even the most basic literacy proficiencies.

Perhaps achievement is so low because the most common interventions have not been designed to actually accelerate literacy achievement. There is an abundance of research reporting that traditional intervention efforts typically do not enhance either the quantity or quality of literacy instruction (Allington & McGill-Franzen, 1989a, 1989b, 1996; Jenkins, Pious, & Peterson, 1988; McGill-Franzen & Allington, 1991; Puma et al., 1997; Thurlow, Ysseldyke, Graden, & Algozzine, 1984). More recently, Baker and Zigmond (1995) offered a similar conclusion after studying inclusionary learning disability program interventions:

> We believe that students with [learning disabilities] in these models of inclusive education were getting a very good *general education*. They were being taught enthusiastically, not grudgingly, by general education teachers.... Whatever "special" instruction or coaching was needed by the students was generally provided by peers or paraprofessionals. If a student needed more than that, special education pull-out services were reinvented.... (p. 173)
>
> We saw very little "specially designed instruction" delivered uniquely to a student with a learning disability.... We saw almost no specific, directed, individualized, intensive, remedial instruction of students who were clearly deficient academically and struggling with schoolwork given.... (p. 179)

Thus, the research available offers little guidance for reliably identifying children experiencing reading/learning disabilities. Further, the large-scale evaluation studies of current programs offer little evidence of (a) any substantial effect on the achievement of reading/learning disability students and (b) any improved access to special, intensive, personalized instruction for children served in current remedial and special education programs. Although the larger scale evaluation studies indicate few benefits of the current programs, these evaluations have been appropriately criticized for lumping together all types of interventions (Light & Pillemer, 1984). So, how might the effective interventions be identified?

Research on Effective Interventions

The definitional ambiguities create difficulties in interpreting the research on effective reading/learning disability interventions. For instance, with no consensus on reliable identification criteria, the available research is fraught with multiple operational definitions of subjects in intervention research studies. In other words, if we select any 10 intervention studies from the research literature, there would be a good chance that 10 different operational definitions of reading/learning disabled subjects were used in selecting the students for the intervention treatment. Even a quick look at the intervention literature will turn up some studies that used the school definitions to identify students considered reading/learning disabled even though there is substantial evidence that such definitions vary widely. At the same time, other studies using a more restrictive definition (e.g., achievement below the 15th percentile on a standardized assessment) also will be located. Still others use unique operational definitions. Given the variance in identification of students as reading/learning disabled, it is hardly surprising that the published literature on intervention often seems contradictory. The heterogeneity of the populations impede the generalization of findings and the ability to replicate results (Lyon & Moats, 1997).

In addition, much of the intervention research has evaluated outcomes only on truly basic skill assessments (e.g., pseudo-word pronunciation, isolated word reading, oral reading accuracy, low-level multiple-choice assessments of comprehension) with incredibly few studies measuring fluency, summarization, response, or analysis of text. Even when deemed successful, few intervention studies have reported significant improvements in comprehension (National Reading Panel,

2000) and virtually none have reported outcomes on the new standards assessments, which focus on the higher order literacy proficiencies (Allington & Woodside-Jiron, 1999). In other words, we have more interventions that demonstrate improved pseudo-word reading and word recognition in isolation than interventions producing children who actually meet the new literacy standards.

With these two important limitations in mind—definitional heterogeneity and limited outcome measures—we can search for useful instructional guidelines that might be derived from the research. It is probably useful to consider educational interventions of three sorts. First, we can design *preventive* interventions, which reliably reduce the incidence of reading difficulties. Second, we can create *acceleration* interventions, designed to accelerate learning so that the literacy development of participating children is comparable to their peers. Third, we need to consider *longer term support* interventions, which are designed to maintain on-level literacy development over the long term (Allington, 2001). This final intervention design has been little considered, resulting in too many children moving in and out of interventions programs—2 years in, 1 year out, 2 years in, 1 year out—and never developing strong literacy proficiencies or habits. Schools, school districts, and state and federal education agencies should be working to create a more or less seamless system of instructional support—a system to replace the current fragmented patchwork of programs, initiatives, and personnel.

Preventive Designs

A range of preventive interventions have been studied. Some focus on creating more powerful early childhood programs as a strategy for reducing reading difficulties later. Others focus on restructuring primary grade classroom instruction to enhance the instructional opportunities for children experiencing difficulty. Still others recommend adding instructional support programs so that difficulties in reading acquisition are identified early on and provide extraordinary instruction designed to accelerate literacy development. In addition, family-focused interventions have become popular as educational and political leaders call for greater parent involvement. A comprehensive program design would include a coherent plan with each of these components (Allington & Cunningham, 2002; Walmsley & Allington, 1995).

Preschool and kindergarten. High-quality preschool and kindergarten programs are proven preventive programs. For instance, the High Scope studies (Berrueta-Clement, Schweinhart, Barnett, Epstein, & Weikart, 1984) and the Abecedarian Project (Carolina Abecedarian Project, 1999) offer powerful evidence of the lasting benefits of early education programs on children's literacy development. Dickinson and Smith (1994), Whitehurst and Lonigan (1998), and McGill-Franzen and Lanford (1994), among others, provide substantial evidence of the benefits of story read-aloud experiences while also demonstrating that the sort of texts read and the adult's style of reading aloud are important factors in preschool literacy development.

A longstanding debate about kindergarten curriculum design has centered around a "skills-emphasis" focus versus a "meaning-emphasis" focus (Dahl, Scharer, Lawson, & Grogan, 1999; Knapp, 1995; Purcell-Gates, McIntyre, & Freppon, 1995; Schweinhart & Weikart, 1998). This seems a false dichotomy, however. Stahl and Miller (1989) completed a meta-analysis of the research on early childhood literacy curriculum and reported that the meaning-emphasis curriculum seemed to produce greater benefits in kindergarten than did the skills-emphasis curriculum. Likewise, Sacks and Mergendoller (1997) reported a comparison of kindergarten outcomes in meaning-versus-skills emphasis kindergarten classrooms serving primarily low-income children. Again, the meaning-emphasis curriculum produced superior outcomes. The evidence also suggests, however, that (a) many kindergarten classrooms cannot be described as nicely fitting either emphasis and (b) the development of important emergent literacy proficiencies has often been neglected in kindergarten instruction.

Obviously, all early childhood and kindergarten programs are not equally effective and many, if not most, could be enhanced if the instructional designs were more often research-based. For instance, the work of McGill-Franzen and her colleagues (1999), Morrow, O'Connor, and Smith (1990), and Neuman (1999) all provide evidence of important kindergarten program design features for enhancing literacy development. A central feature of each of these efforts was dramatically enhancing children's experiences with print. Kindergarten programs that immerse children in books, stories, and opportunities to engage in writing activity of various sorts (both inventive and more structured) significantly fostered growth in emergent literacy development. Given the evidence on the wide variability of preschool experiences with books, stories, and print, it seems unsurprising that children from lower income families benefited enormously from these print-rich programs (McGill-Franzen, Lanford, & Adams, in press).

Class size reduction. Class size reduction does seem an effective preventive intervention design. Achilles (1999) provides a comprehensive review of the impact of class-size reduction designs on the reading proficiency of children. He details the huge recent experimental study, the Tennessee STAR study, of class size reduction and notes that when class sizes were reduced to the 13–18 range in grades K–3, reading proficiency was improved substantially, as were long-term educational outcomes (fewer dropouts, reduced school suspensions, improved high school grades). The classroom observations suggested, not surprisingly, that smaller classes allowed teachers to better focus on the instructional needs of individual children.

Phonological awareness intervention. Phonological awareness has been linked with literacy development, and although the relationship seems less than straightforward (Coles, 2000), many do propose such a relationship (Foorman, Francis, Shaywitz, Shaywitz, & Fletcher, 1997). However, Moustafa (1997) argues that phonemic segmentation is unnecessary except when electing to teach students through a synthetic phonics approach. She offers an onset-rime strategy for developing effective decoding proficiencies, one similar to that popularized by Cunningham (1998). The work of Gaskins (1998) and her colleagues suggests that an onset-rime approach can be particularly effective with children identified as learning disabled and those identified as dyslexic (Lovett et al., 1994). Although some have argued that a "phonological core deficit" lies at the root of children's reading difficulties, Troia (1999) provides an extensive review of the research on phonological awareness interventions. He concludes that few of the published studies meet commonly accepted criteria for experimental design (e.g., fewer than half used random assignment, inadequate measurement sensitivity in two thirds of the studies, etc.) and cautions that the research available seems not to justify much of the enthusiasm for particular intervention efforts. Most studies, for instance, were not designed to study the development or role of phonological awareness longitudinally. Bus and vanIJzendoorn (1999) demonstrate that kindergarten phonological awareness accounts for but a very small proportion (less than 1%) of the variance in reading achievement at fourth grade. In other words, there are a number of other important factors that are far more influential as children mature (Pressley & Allington, 1999).

Simply put, it seems that most children develop adequate phonological awareness as they acquire literacy proficiency (Allington, 1997; International Reading Association, 1998). The research suggests, however, that a small group of children, perhaps 15–20%, fail to acquire the basic conceptual insight that English is an alphabetic language and that words can be decomposed into individual phonemes (e.g., CAT can be decomposed into C/A/T). Developing this conceptual insight seems important in learning to read and spell an alphabetic language such as English. The interventions that most successfully foster phonemic segmentation vary in focus, from those that emphasize "sound stretching" as a component of early classroom invented spelling and morning message activities (McGill-Franzen et al., 1999; Scanlon & Vellutino, 1997), to those that focus more on isolated segmenting through activities such as Turtletalk (Gough, 1998) or with sound boxes or manipulatives (Clay & Cazden, 1990), to those that emphasize blending and even cueing articulatory features (Torgesen,Wagner, Rashotte, Alexander, & Conway, 1997). Wise and Olsen (1999) note that from their comparative studies of phonological awareness interventions "it appears that the exact method of teaching phonological awareness may be less important than once thought." They suggest that schools worry less about the particular intervention methodology and more about providing targeted training to children who need it. That is, some children seem not to benefit much from whole class activities but thrive in small-group or tutorial sessions. Some seem to benefit from less structured approaches and others from more structured models. A very few children (1–2%) struggle mightily and experience continued difficulty even after intensive intervention (Vellutino et al., 1996).

At this point, it seems clear that the development of phonological awareness in early readers should be monitored (and monitoring through attempts at invented spelling may provide a most appropriate assessment strategy) and when development seems stalled or lags behind, an intervention should be readily available. The intervention to be used will depend largely on children's responses. Currently, there exists no clear evidence of the superiority of one approach versus others, although, as mentioned earlier, more intensive interventions, such as tutorials, have produced the best record in fostering the conceptual development needed for phonemic segmentation for those children who experience difficulties with this conceptual learning. Nonetheless, a caution is in order. As Vellutino et al. (1996) noted, a few children developed reading proficiency without ever acquiring phoneme segmentation proficiency and not all children who acquired phoneme segmentation became proficient readers.

Family programs. Programs focusing on parental involvement are popular, but there is a limited research base indicating significant effects on children's achievement resulting from such programs. Although researchers have demonstrated that more academically successful children more often have parents who are involved both at school and at home, efforts to increase the involvement of parents of low-achieving children as an intervention to enhance achievement have not been particularly successful, although there are notable exceptions (e.g., Paratore, Melzi, & Krol-Sinclair, 1999). This is not to suggest that parent support programs should be avoided, but rather that such programs are unlikely to serve as a sufficient preventive (or remedial) intervention design.

Acceleration Designs

Acceleration designs run the gamut from classroom corrective reading efforts to remedial tutorials, from in-class specialist support to pull-out add-on interventions.

Classroom corrective reading. There are many popular interventions focused on restructuring classroom reading and language arts lessons. Duffy-Hester (1999) provides a review of six such programs: Four Blocks (Cunningham & Allington, 2002; Cunningham & Hall, 1998), Fluency Oriented Reading Instruction (Stahl, Huebach, & Cramond, 1997), Concept Oriented Reading Instruction (Guthrie et al., 1996), Book Club (Goatley, Brock, & Raphael, 1995), Kamehameha Early Education Program (Au & Carroll, 1997), and Success For All (Slavin, Madden, Dolan, & Wasik, 1996; Venezky, 1998). Allington and Walmsley (1995) provide case studies of the Early Literacy Intervention (Taylor, Short, Shearer, & Frye, 1995), Accelerated Schools (Knight & Stallings, 1995), and theme-driven instruction (Walp & Walmsley, 1995).

Several principles can be drawn from the reviews of effective classroom interventions. First, there are several routes to accelerating reading development; the programs reviewed are not "cookie-cutter" similar. Second, explicit instruction in the context of authentic reading and writing activity is an important component of such interventions. Some students need more explicit demonstrations of skill and strategy use, but integrating such demonstrations into classroom reading and writing is more effective than isolated skills instruction and practice (Duffy, 1993). Third, classroom instruction needs to be tailored to student needs. This sort of tailoring requires teachers to routinely evaluate the appropriateness of reading materials and strategy use and have the range of materials necessary to respond to student needs. Classroom program designs that provide copies of the same texts for all students—everyone reading the same basal story or the same trade book—will fail to successfully develop reading proficiencies in all students. Finally, developing teacher expertise is important. Teachers with greater professional understanding of instruction and the authority to act on that expertise are central to creating classroom interventions that accelerate the development of all children.

Another area of important research is the recent studies of exemplary elementary teachers. A primary effect of exemplary classroom instruction is the substantial reduction in the numbers of children who experience reading and learning difficulties (Allington & Johnston, 2001; Bembry, Jordan, Gomez, Anderson, & Mendro, 1998; Pressley et al., 1996, 2001; Taylor et al., 2000). This finding is, perhaps, not surprising, but it is important because so little research has studied the impact of the quality of classroom instruction on reading development and reading difficulties. Effective teachers provide more personalized and small-group instruction, more contextualized skills teaching, substantially more reading and writing opportunities, and more interactive lessons than their less effective peers.

Add-on instructional programs. Vellutino and his colleagues (1996), Pinnell, Lyons, Deford, Bryk, and Seltzer (1994), and Hiebert, Colt, Catto, and Gury (1992) offered add-on early instructional interventions and in each case dramatically reduced the incidence of reading difficulties, both mild and severe. In these cases, struggling readers were provided with instruction outside the classroom, often in tutorial or very small group (two or three children) formats. In each case, use of appropriately difficult texts, focused and personalized expert instruction, and substantial opportunities to read and write characterized these effective intervention designs. These studies suggest that add-on interventions are ineffective only when poorly designed.

Tutoring. Many early interventions involve one-to-one tutoring. The most widely implemented tutorial is Reading Recovery (Pinnell et al., 1994). Reading Recovery is also, perhaps, the best researched tutorial and the one with the strongest evidence of its effect on accelerating the development of early reading. Wasik and Slavin (1993) noted that "the effects of Reading Recovery are impressive at the end of the implementation year, and the effects are maintained for at least 2 years" (p. 187). Independent reviews of Reading Recovery are well summarized by Shanahan and Barr (1995), who reported that although reading development was accelerated through the intervention, some of the effect faded over time as children were released and returned to general education.

Although other tutoring efforts (e.g., Orton-Gillingham, Slingerlands) have been available for some years, there is little independent research indicating any substantial positive effects on reading achievement (Stahl, Duffy-Hester, & Stahl, 1998). In their review of five tutoring programs, Wasik and Slavin (1993) found that the most comprehensive programs produced larger gains than the more narrowly focused tutorials and that the qualifications of the tutors was also important, with certified teachers as tutors producing better results than paraprofessional tutors. Other studies of the use of paraprofessionals (Achilles, 1999; Rowan & Guthrie, 1989) and volunteers (Wasik, 1998) have produced mixed results. Interventions that rely on relatively unskilled, although often enthusiastic, paraprofessionals and volunteers should not be routinely expected to produce high-quality, personalized instruction nor substantial growth in reading proficiencies. Such efforts may be useful in providing children with extended practice with reading and writing, and such supportive practice opportunities may benefit many children. However, many others need more intensive and more personalized expert instruction and neither paraprofessionals nor volunteers seem good candidates for providing such instruction.

Recently, a number of training packages for volunteers and paraprofessionals have appeared on the market (Herrmann, 1994; Johnston, Invernizzi, & Juel, 1998; Morris, 1999), but there exists only a modest research base demonstrating the impact of these packages. Providing training for paraprofessionals and volunteers seems essential, but even then their instructional roles must necessarily be limited.

Very small group instruction. The most traditional remedial and special education intervention design has been the small group add-on design. In these efforts, targeted students are offered small-group instruction from a specialist teacher or (increasingly common) a paraprofessional. The research suggests that the number of children in the small group is important. Although many reading and learning disabilities specialists routinely work with groups of five to nine students, the evidence indicates that group size needs to shrink considerably for measurable effects to be achieved. In addition, there is substantial evidence that the use of paraprofessionals to deliver the intervention offers little academic benefit to children (Achilles, 1999; International Reading Association, 1994).

Recently, Swanson and Hoskyn (1998) reviewed more than 900 studies of educational interventions with reading/learning disabled students. However, only 180 of these studies met even the most minimal quality criteria. In an analysis of these studies, only 18 of the 900 studies surveyed were rated high on methodological quality. Swanson and Hoskyn concluded that much weak intervention research has been published (a situation much like the research on phonological awareness discussed earlier). This seems to account for the lack of a consistent message about appropriate instructional interventions. For instance, when Swanson and Hoskyn examined the studies of high methodological quality they found that these studies reported smaller effect sizes (reported gains were smaller) than the effects reported in lower quality studies. In addition, studies using standardized outcome measures reported lower effect sizes than studies that used experimenter-developed measures. Swanson found only three intervention components contributed unique variance to the overall effect size estimates: control of task difficulty, use of small interactive instructional groups, and directed responses/questioning (such as that found in reciprocal teaching).

The aggregated data from these studies support the use of explicit instructional strategy teaching in small groups (two or three students) in highly interactive sessions in which students are reading books of an appropriate level of complexity. These seem also to be key features of the successful small-group interventions reported by others (Hiebert et al., 1992; Pinnell et al., 1994; Vellutino et al., 1996). Unfortunately, few remedial or special education programs seem to match these characteristics (Baker & Zigmond, 1995; Pikulski, 1994; Puma et al., 1997).

Longer Term Support

There seems to be no research on school programs designed to provide long-term support for children with reading/learning disabilities. It is impossible to say whether this is because such programs do not exist or because no one has done such a study. However, if such programs exist, they seem to be rare. Currently, virtually all remedial interventions are of a short-term nature—often 1 year or less. Although special education services continue longer, it seems that there too program planning typically occurs on an annual basis rather than on a long-term (say 3 to 5 year) basis. Although it would likely be difficult to specify with any precision the sort of instruction any individual might need over the longer term, it is not difficult to predict that some students will need such support. Until planning and budgeting becomes more focused on longer term needs, adequate funding to meet longer term student needs will likely be scarce (Walmsley & Allington, 1995). One might begin by asking the following: How many current fifth graders will likely need additional support throughout middle school to achieve expected standards? How many will need some sort of support throughout high school to achieve the standards? Obviously, the answer would vary from school to school, but every school can expect that some fifth graders will need longer term support. Yet, virtually no school creates longer term budgeting plans to fund the support that everyone recognizes that some children and adolescents will need.

More Effective Intervention Plans

There is ample guidance available for the redesign of school literacy programs. However, such programs will likely require reconceptualizing the problem of literacy learning difficulties.

Reconceptualizing Reading/Learning Disabilities

We must reconceptualize reading/learning disability as something akin to the interaction of the normal distribution of proclivity for learning to read and differential access to sufficient, appropriate instruction (McGill-Franzen & Allington, 1991; Vellutino et al., 1996). In other words, some children learn to read with relative ease and some struggle when offered typical classroom instruction. This situation should be viewed as largely normal. If we can reconceptualize learning to read as a process of acquisition that varies in difficulty across the range of children we teach, then the difficulties some children have would be seen as normally occurring difficulties, not as some exotic disability. School instructional programs might then be more often designed with the expectation that many children will need access to larger amounts of more expert, more intensive, and more personalized teaching if they are to acquire reading proficiency alongside their peers.

What we now identify as reading/learning disability would, instead, be reconceptualized as a more comprehensive (and more expensive) instructional problem to be dealt with as part of the regular course of designing school programs, which would then result in every child learning to read alongside his or her peers. Addressing the issue of reading difficulties would require school programs that were more comprehensive and flexible than most are today. These programs would focus on early intensive intervention but would acknowledge that some children will undoubtedly require long-term extraordinary instructional support—in some cases across the school career.

This reconceptualization has some support in the longitudinal epidemiological study conducted by Shaywitz et al. (1992). They found no specific subset of children who actually fit the traditional definition of dyslexics. Instead, the long-term reading development of the large group of children they studied indicated that reading achievement reflected the normal curve distribution—a few very good readers, a few very poor readers, and bunches of readers with generally similar patterns of development. They offered no instructional intervention but simply evaluated reading achievement year after year. Given the current limited availability of sustained, intensive, expert extraordinary instructional support, their findings do not seem surprising. Without serious rethinking of support for children who find learning to read more difficult, many children will continue to lag behind their peers.

Creating schools in which all children achieve a high absolute standard of literacy proficiency is a more difficult task than creating the typical school in which roughly one quarter of the students achieve this standard (the "proficient" level on the NAEP). Creating such schools will likely require higher levels of funding than are currently available (Odden, 1997), but a good first step would be designing instructional efforts that make better use of the funding now available.

Crafting a Comprehensive Literacy Instructional Plan

Any comprehensive instructional plan would begin with ensuring the availability of preventive programs. This might include a focus, especially in schools serving large numbers of students from low-income families, on the widely acknowledged disadvantage in preschool experiences with print, stories, and literate talk (McGill-Franzen et al., in press; Neuman & Celano, 2001). A coordinated effort by the school to ensure that preschool programs—Head Start, Even Start, prekindergarten, preschool special education—and the kindergarten program offer print- and language-rich environments would be an initial step. Offering family support, in the form of access to the school library collections on weekends and during the summer, story hours in the evening and on weekends for preschoolers and their families, and, perhaps, parent training in dialogic reading (Whitehurst & Lonigan, 1998) of books could be a second aspect of a coordinated preventive plan.

Smaller class sizes (< 20) would be available in the primary grades and the quality of classroom instruction would be enhanced through enriched professional development for teachers and by providing more extensive classroom curriculum resources (e.g., substantial classroom libraries, multilevel book collections). Smaller classes work better when teachers are more expert (Pressley, 1998), and investing in the development of the expertise of instructional staff is critical, although time consuming (Darling-Hammond, 1999; Duffy, 1993). Just providing rich curriculum resources seems insufficient (McGill-Franzen et al., 1999).

A comprehensive literacy program would include well-designed acceleration services. Expert specialist teachers would be available to provide assistance in monitoring children's literacy development, mentoring for new and less expert teachers, and tutorial and very small group intensive instructional interventions for children who found learning to read more difficult. At least some of these services would be available in extended-day programs and during the summer. Staffing such components might make far better use of flextime scheduling of professional staff than is currently practiced. Convergent research evidence would guide the design of classroom and add-on instructional interventions. Thus, instead of futilely searching for the "one best" or "proven" program, schools would create responsive instructional efforts that responded to the needs of children in flexible, comprehensive ways (Allington & Cunningham, 2002).

Finally, schools would develop longer term instructional support plans. Such planning might use a "census-based" approach (Kaleba, 1999). That is, given historical data on the numbers of children experiencing difficulties in acquiring reading proficiencies, schools would engage in longer term planning for creating effective interventions (including longer term budgeting projections, professional development offerings, program scheduling, etc.). Currently, most schools have no such planning process in place. Each year, then, there are scattered and uncoordinated planning efforts, typically resulting in a number of ill-conceived and largely uncoordinated instructional support efforts. Rarely does school planning for support programs involve teachers and administrators from the pre-K–12 span, rarely are both general and special education staff collaboratively involved, and all too often after-school and summer school programs are not well linked to core curriculum instructional plans.

Much of the current fragmentation in school intervention plans can be attributed to federal and state program guidelines (Allington, 1994). Schools cannot simply rely on federal and state programs and funding resources, however, in developing a comprehensive plan. Educating all children well is an unlikely outcome of the current piecemeal planning and budgeting process. When districts begin estimating actual budget needs for a comprehensive program, they also should estimate longer term funds available from federal and state sources that might defray *some* of the costs of a comprehensive program. However, when planning begins with individual allocations by building from the several federal and state funding streams and when fiscal support relies almost wholly on those funds, the outcome is, not surprisingly, a collection of uncoordinated program efforts that is expensive and largely ineffective in the longer term. Unfortunately, such fragmented planning and implementation is common today and the outcomes of these expensive efforts are largely disappointing.

It may be that achieving the sort of standards set by policymakers will require additional funding. Such funding is unlikely, however, if the funds currently available are largely squandered—squandered in the sense that too few students overcome their literacy learning difficulties. The past century has seen an enormous expansion of literacy proficiency (Rothstein, 1998). To achieve the universally high standards of literacy now called for, schools *must* reconceptualize literacy teaching and learning and craft school programs that provide a more coherent and comprehensive instructional plan. Until the current incoherent array of well-meaning intervention efforts are replaced by more comprehensive plans drawing from the convergent research, too many children will be ill-served and too much professional effort will be underproductive.

Conclusion

Recent educational policymaking points to the need for a reconceptualization of the notion of reading/learning disability. Central to this rethinking is the idea that we should not be surprised that some children find learning to read and write more difficult than do others. Rather than labeling and segregating those who struggle to become literate, we need to restructure our instructional programs and resources to produce more coherent and more powerful intervention designs as well as more expert classroom literacy instruction. Coles (1998) and Duffy and Hoffman (1999) have noted the futility of debates about the "one best method" for developing children's literacy proficiencies. However, it is instructional method and curriculum materials that typically are indicted whenever literacy proficiencies are deemed insufficient. Now that three expert panels (National Commission on Teaching and America's Future, 1997; National Reading Panel, 2000; Snow et al., 1998) have each weighed the research evidence and concluded that method and materials are neither the locus of the problem nor the panacea for addressing the problems many children face in their efforts to acquire literacy proficiency, perhaps we can focus political and professional attention on designing and funding educational efforts that just might deliver on the promise, all children readers and writers.

Questions for Discussion

1. Interview an elementary school principal and inquire about preventive, acceleration, and longer term instructional support plans currently in place. Are clear links between preschool programs and elementary programs and between elementary and middle school programs well defined? Is development of phonemic awareness monitored? Is tutoring available?

2. Interview a high school teacher and ask if there are students who have difficulty reading the assigned textbooks. Ask what types of interventions are available for such students and how these efforts are linked to the classroom curriculum demands.

3. When schools develop effective programs, individual factors such as family wealth are largely minimized when it comes to school success. Find out whether children from low-wealth (e.g., free lunch eligible) families are overrepresented in remedial and special education classes.

4. Examine several individualized education plans (IEP) and look for individual learning goals linked to state and district grade-level curriculum standards. Is the IEP well coordinated with classroom instruction?

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Chapter 13

Metacognition and Self-Regulated Comprehension

Michael Pressley

Suppose that you ask a sixth grader (or a twelfth grader for that matter) to read a chapter in his or her science or social studies text in order to understand and remember what is in the chapter. What does the student do? Most students begin at the beginning of the chapter and read it sentence by sentence, if not word by word, from beginning to end. By grade 6, most children's decoding abilities are good enough that they can read chapters in their textbook from beginning to end. The problem, however, is that many of those same students do not understand well what they read, let alone remember the content of the chapter later.

A few interrelated points will be made in this chapter: (a) Skilled reading involves fluent word recognition, but also much more. Good comprehenders are extremely active as they read, using a variety of comprehension strategies in an articulated fashion as they read challenging text. (b) As part of reading instruction that includes word recognition and teaching of vocabulary, comprehension strategies can and should be taught beginning in the primary grades, with it now understood that long-term instruction of sophisticated comprehension strategies clearly improves student understanding and memory of texts that are read. (c) Comprehension strategies often are not taught.

After these points are made, the nature of effective comprehension instruction will be reviewed in metacognitive terms. Metacognition is knowledge of thinking processes, both knowledge of the thinking occurring in the here and now (e.g., "I am really struggling to figure out how to write this introduction; I believe that the introduction I have just written makes sense") and in the long term (e.g., "I know a number of specific strategies for planning a composition, rough drafting it, and revising the draft"). In the case of reading, the most important here-and-now metacognition is awareness of whether a text is being understood (or conversely, awareness of when text is not being understood and probably will not be remembered). Long-term metacognition pertaining to reading includes knowledge of comprehension strategies (i.e., knowing that good readers predict, constructing images representing ideas encountered in text and summarizing what they have read), as well as the knowledge that good readers use the strategies consciously when they read. Metacognition, which is needed to use comprehension strategies well, can begin during direct teacher explanations and modeling of strategies but develops most completely when students practice using comprehension strategies as they read. It seems especially helpful if such practice includes opportunities to explain one's strategies use and reflect on the use of strategies over the course of semesters of schooling. That is, in Vygotskian (1978) terms, the internalization of comprehension strategies involves long-term practice with the strategies, including opportunities to reflect on strategies use with others.

The Nature of Skilled Comprehension

The perspective in this chapter (see also Adams, Treiman, & Pressley, 1998; Pressley, 1998) is that skilled reading comprehension is complicated, depending on letter-, word-, and above-the-word-level processes. The focus in this chapter, however, will be on above-the-word-level comprehension strategies.

Letter- and Word-Level Processes in Comprehension

One of the most striking characteristics of skilled reading is that word-by-word reading requires little effort. That is, reading of words is fluent, with most words being recognized by sight rather than sounded out. This is important because reading, both decoding and comprehension, takes place in and depends on short-term memory, and short-term capacity is very limited. The typical high school senior can only hold approximately seven pieces of information in mind at any one time (Miller, 1956). If that student is not fluent in word recognition, or if he or she is still sounding out words, much short-term capacity is consumed by decoding. The nonfluent reader is thinking about the sounds of the individual letters and letter combinations while trying to blend them. When that is the case, there is not much capacity left for comprehension, either of the individual words being read or for understanding the sentences, paragraphs, or whole text being read (e.g., LaBerge & Samuels, 1974). In contrast, because the fluent reader dedicates little capacity to word recognition, most of his or her capacity is available for comprehension. Word recognition skills matter in comprehension.

Thus, the emphasis in recent years on improving decoding instruction, as reflected by other chapters in this volume, should improve the comprehension of young readers. In fact, it does. Tan and Nicholson (1997) contributed one especially important study examining the link between instruction in word recognition and comprehension. They studied children from age 7 to 10 years who were experiencing difficulties in beginning reading. Tan and Nicholson believed that if these students learned to recognize words fluently, their reading comprehension would improve. Therefore, in one condition of the study, students were drilled on the recognition of a set of words until each of the words was recognized effortlessly. The participants in the control condition were given instruction about the same set of words, although the instruction they received focused on the meaning of the words, with the students and teacher discussing in some depth the meaning of each of the words. Thus, with respect to comprehension, the control condition was one that might be expected to affect comprehension positively, making this a demanding control condition.

Even so, after training, when the students read a passage containing the target words, the students given the fluency drilling understood the passage better than the control students who had participated in discussions of the meanings of the words. Specifically, the fluency-trained students answered comprehension questions on the chapter more capably than did the meaning-instructed control participants. This study provided powerful evidence that word recognition processes are important in comprehension (see also Breznitz, 1997a, 1997b).

Of course, that the fluency-trained students comprehended better than the participants taught the definitions of the words does not imply that instruction in the meaning of words is not important. It is well established that good comprehenders generally have good vocabularies (e.g., Anderson & Freebody, 1981; Nagy, Anderson, & Herman, 1987). Beyond that, however, there is evidence that teaching students vocabulary, in fact, increases their comprehension abilities.

Beck, Perfetti, and McKeown (1982) provided one well-known experiment establishing the causal relationship between teaching of vocabulary and improvement of comprehension. Fourth-grade students were taught 104 new vocabulary words over the course of half a school year. The words were taught thoroughly to these students, with them encountering the words in multiple contexts and using them in multiple ways over the course of the semester. Otherwise comparable students served in a control condition, which did not include the teaching of the 104 word meanings. At the end of the study, the vocabulary-instructed students outperformed the controls on a standardized comprehension test. Thus, developing students' vocabulary is also a way to improve their comprehension (see also McKeown, Beck, Omanson, & Perfetti, 1983; McKeown, Beck, Omanson, & Pople, 1985).

In summary, comprehension depends on letter- and word-level processes. That is only the beginning of the story of skilled comprehension, however.

Above-the-Word-Level Comprehension Processes

One methodology more than any other has revealed much about the active comprehension strategies of good readers as they make sense of text. There have been more than 40 published studies in which readers were asked to think aloud as they read text. Pressley and Afflerbach (1995) reviewed this literature, and in doing so, were able to catalog the many strategies that are used by good readers as they go through a text. Those strategies include processes that occur before a text is read, as it is read, and after the front-to-back reading of the text is completed.

Before reading. A good reader does not just dive into a text, proceeding from beginning to end. First, the good reader is clear about her or his goal in reading the text (e.g., to learn material well enough to recall it in class tomorrow, to find a specific piece of information). Second, the reader often skims the text in advance of reading or at least looks through it. A prereading skim can reveal information about the length and structure of the text, where the important parts of the text are located, and whether the text is relevant to the reader's goals (e.g., does it contain the information the reader wants to find?). In short, a great deal of here-and-now metacognition can be developed through prereading, for example, making the reader aware of which parts of the text should be read in detail and which parts might be ignored.

Third, before reading, good readers often activate prior knowledge, which can then be related to the ideas in the text. Such activation of prior knowledge, of course, will affect comprehension of the text during reading (Anderson & Pearson, 1984). A prereading skim of the text often results in the formation of hypotheses, based on prior knowledge, about what is going to be covered in the text. Such hypotheses are the beginning of understanding of the meaning of the text, with the hypotheses often revised as information in text is encountered during careful reading of the text.

During reading. Once actual reading begins, skilled readers generally do read texts from front to back. Often, however, they are selective in doing so, for example, skipping information that is not relevant to their current reading goals. As they read, good readers at times reread information that seems especially important or is difficult to understand. Sometimes they take notes or pause to reflect on an idea presented in the text. Sometimes they make predictions about what is coming up in the text, and those predictions are sometimes modified as the reader gets deeper into the text. That is, hypotheses about what might be in the text based on prior knowledge can be evaluated and updated as the reader comes to understand the messages in the text.

As good readers proceed through a text, they identify important information in the text (e.g., they read more carefully parts of the text presenting "news"). That is, good readers not only look for important information, they process that important information differentially (e.g., rereading it, underlining it, paraphrasing it). Good readers are especially attuned to topic sentences and topic paragraphs.

Prior knowledge permits many unconscious inferences during reading (e.g., when reading that a book slipped off a table, the reader infers that it dropped a few feef to the floor below). Good readers also make conscious inferences as they read, however. Sometimes they try to figure out the referent for a pronoun or what words mean based on context clues. Often, good readers try to figure out how information in a text relates to their prior knowledge (e.g., inferring that the family in a story is a lot like the Brady Bunch). Good readers sometimes attempt to make inferences about the author (e.g., wondering which team this writer cheers for). They sometimes attempt to make inferences about the characters in the text (e.g., guessing the character's intents, background, or state of mind).

Good readers attempt to integrate the ideas in text to get the main ideas out of the text. This can involve analyzing the structure of the text as the reader reflects on the meaning of each part of the text. Sometimes the reader will jump around in text to construct a main idea, perhaps looking back at some information read quickly the first time and looking ahead to read something that was noted to be in the text during the prereading skim. Sometimes good readers make notes about ideas in different parts of the text to assist integration of the text.

Good readers are highly interpretive as they read. Their interpretations are in their paraphrases. They are reflected in the mental images they report as they read. Good readers come to conclusions about ideas in the text based on when the text was written, their perception of the author's purpose, the tone of the text, and the author's choice of examples. Sometimes the interpretations are evaluative (e.g., I do not believe what this author is claiming).

Good readers are also highly evaluative of the text, deciding whether a text is interesting or the arguments made in it are credible. They make evaluations of the style of the text (e.g., the quality of the writing), as well as its content. They often have affective reactions, from positive ones (e.g., satisfaction with the content of the text) to negative ones (e.g., boredom, frustration).

Good readers monitor as they read, with the result that the good reader is very metacognitively aware during reading. That is, good readers are aware of the characteristics of the text (e.g., noting whether the text is relevant to their reading goals, how the different parts of the text are related to one another). This monitoring plays an important role in determining the reader's processing of and thinking about text. Thus, noting that the text is irrelevant to the reader's purpose can stop the reading of it in favor of looking for a more pertinent text. Recognition of the text's structure can affect how the reader jumps around the text in pursuit of the main ideas in the text.

Good readers also monitor problems they experience as they read. For example, good readers are very aware when they are reading a challenging text, one demanding all their capacity. They are aware of when their concentration wanes during a reading and when they are reading too quickly to understand the text. An important form of problem monitoring is awareness that a text is not being understood. Such awareness of comprehension problems can lead to shifts in reading strategies, for example, prompting more careful reading of text or rereading of parts of a text that are especially challenging.

In summary, as good readers go through a text, they are active. They relate ideas in text to their prior knowledge, construct images, and generate summaries. They do a lot of monitoring, with their awareness during reading affecting how they process the text. Such here-and-now metacognition in the form of awareness is always being generated as the good reader reads, with such awareness going far in determining the nature of the reader's activity.

After reading. Once the good reader makes it through a text one time, there is additional processing of text. Often there is selective rereading. Sometimes the good reader will attempt to recite the text, constructing a summary of it. Good readers often will reflect on what they have just read, perhaps evaluating the credibility of the material. Sometimes they will think about how they are going to use the information in the text (e.g., This can help with that section of my paper dealing with...).

Monitoring also occurs at the conclusion of a reading. Thus, good readers can be aware of whether their understanding of the text is consistent with all the ideas expressed in it. When the reader senses that something is missing from their understanding, this can motivate additional reading of the text to flesh out the reader's understanding.

Good comprehenders are capable and active readers. Good comprehension depends on fluent reading, because nonfluent reading demands valuable mental capacity that is required for comprehension to occur. Good comprehension also depends on an extensive vocabulary, for above-word-level comprehension cannot occur if individual words are not understood. The most salient comprehension processes of good readers involve comprehension above the word level, however. Good readers derive the meanings of whole texts by engaging the text before they read it, while they read it, and after a first reading is completed (Levin & Pressley, 1981). Before reading, good readers often skim a text and make predictions about it based on their prior knowledge. As the good comprehender reads, he or she reads selectively, reading some parts carefully (i.e., those particularly pertinent to the reader's purpose, sections that are difficult) and reading others more quickly and with less care. During reading, good comprehenders respond to text, asking questions about the content, constructing mental images representing the meaning in text, and paraphrasing the text. Once a first reading is concluded, good comprehenders continue to reflect on text, reviewing it, and perhaps rereading some parts of the text that seem especially important to the reader's purpose or parts that were not well understood during the first pass.

The importance of fluency and vocabulary in comprehension was established in part in true experiments, with instruction that improved fluency and vocabulary also improving comprehension, making the causal connections between fluency and vocabulary and comprehension clear. As it turns out, the most extensive experimental literature evaluating instructional effects on comprehension is with respect to comprehension strategies. There has been much experimental evidence establishing that when readers are taught to use comprehension strategies, their comprehension, in fact, improves. This is powerful evidence of the causal relationship between comprehension strategy use and comprehension, with the relevant research outcomes discussed in the next section. The conclusion from this section, however, is a different one: Good readers use comprehension strategies consciously when they read. When burgeoning readers are taught comprehension strategies, they are being taught to read as good readers do.

Comprehension Strategies Instruction

There have been many studies of comprehension strategies instruction conducted since the middle 1970s. When this literature is reviewed chronologically, there are huge differences in the nature of the studies conducted earlier in the period (i.e., in the 1970s and 1980s) and those conducted in the 1990s. Thus, research in this section is reviewed chronologically, although much more attention is given to the more recent work, as it reflects instruction that can fit well in schools and that can go far in stimulating students to engage text in the ways in which good comprehenders engage text.

Strategy Instruction Experiments in the 1970s and Early 1980s

Many experiments were conducted in which some children were taught a strategy that the researcher believed would improve comprehension and memory of text while other children were left to their own devices to read and understand text. Some of the strategies that were validated as positively affecting comprehension and memory of text included the following (Pearson & Dole, 1987; Pearson & Fielding, 1991; Pressley, Johnson, Symos, McGoldrick, & Kurita, 1989):

- Relating text to prior knowledge: When children in the elementary grades are taught to relate the ideas in text to what they already know, their comprehension and memory of text improves (e.g., Dewitz, Carr, & Patberg, 1987; Hansen & Pearson, 1983). Prior knowledge can be related to text by making predictions about what is likely to be in a passage based on what the reader already knows. Prior knowledge also can be related as first reading; then, prior knowledge can be related to text after reading as readers reflect on what they have read.

- Mental imagery: When children in the middle and later elementary grades are taught to construct images representing the ideas related by text, their memory and comprehension of text improves (Gambrell & Bales, 1986; Gambrell & Jawitz, 1993; Pressley, 1977; Sadoski, 1983; 1985).
- Question generation: When elementary students are taught to question themselves as they read, their understanding of text improves. For example, Davey and McBride (1986) taught grade 6 students how to generate questions that integrate important ideas presented in a passage, with this especially improving the kinds of inferences the readers made as they read.
- Summarization: When children are instructed to summarize as they read, their understanding and memory of text improves. For many young readers, it helps to be provided explicit procedures for summarization. Thus, Bean and Steenwyk (1984; inspired by Brown & Day, 1983) taught grade 6 students to summarize by (a) deleting trivial information, (b) deleting redundant information, (c) substituting superordinate terms for lists of terms, (d) integrating a series of events with a superordinate action term, (e) selecting a topic sentence, and (f) making up a topic sentence if there is not one in the passage.

In summary, by the mid-1980s there was a great deal of evidence favoring the teaching of comprehension strategies, although most of it pertained to the instruction of individual strategies. The think-aloud studies reviewed earlier, however, had made clear that good readers were not single strategy users, but rather orchestrated a variety of strategies as they read. Thus, it made sense for researchers to begin exploration of the possibility that children could be taught repertoires of comprehension strategies, which they could use fluently. The best known of these interventions is reciprocal teaching.

Reciprocal teaching as designed by Palincsar and Brown (1984) occurs in small reading groups, with the students in the group taking turns as leader. The student leader specifically guides the group to use a small repertoire of comprehension strategies: predicting, questioning during reading, seeking clarification when confused, and summarizing. Although an adult teacher monitors what goes on in the groups, the adult's role is limited to providing support and assistance on an as-needed basis. The idea is for students to become familiar with the strategies and comfortable with regulating the use of strategies on their own. The theory is that by practicing the use of the strategies in the peer group, student members of the group eventually will internalize the strategies, coming to own them and use them on their own as they read.

In fact, 20 sessions or so of reciprocal teaching does produce young readers who know how to use the strategies that are part of the reciprocal teaching package. Moreover, although the effects often are not large, there typically is some improvement in comprehension and memory of text (Brown & Palincsar, 1989; Rosenshine & Meister, 1994).

When the earliest studies of reciprocal teaching appeared (i.e., Palincsar & Brown, 1984), they did much to stimulate teaching of strategies in schools. However, often the resulting instruction did not much resemble reciprocal teaching. Hence, my colleagues and I invented another name for the teaching of multiple comprehension strategies in school: transactional strategies instruction. This label captures multiple characteristics of comprehension instruction as it occurs in classrooms committed to teaching comprehension strategies.

Strategies Instruction in the Late 1980s and Early 1990s: Transactional Strategies Instruction

In the late 1980s and early 1990s, my colleagues and I intensively and extensively studied three schools that focused their reading instruction in grades 2 through 6 on comprehension strategies instruction (e.g., Pressley et al., 1992). Somewhat to our surprise, there was great similarity in the instruction observed in the three settings, with the following characteristics of instruction consistently observed:

- Strategies were taught: Both decoding and comprehension strategies were taught, with the comprehension strategies being the ones validated in the experiments on individual strategies, including those that were part of reciprocal teaching (i.e., activating prior knowledge by making predictions and relating what is being read, asking questions, constructing mental images, clarifying, summarizing).
- Strategies were taught during small-group instruction but used throughout the day: The small group provided a forum for the teacher to explain strategies and model their use and for students to practice applying strategies to texts and report to classmates the

strategies they were using (e.g., discussing images that came to mind as they read, relating their summaries, indicating to classmates how the text relates to their own worlds). As students did so, they were explaining strategies use and modeling it for their peers. Teachers provided assistance as students needed it, although in time the students were very autonomous in the reading group, choosing strategies on their own and fluidly reporting their strategies use to groupmates.

- Strategies were taught as interpretive vehicles: Students were taught that strategies can help them to get beyond literal understanding of the text and that use of strategies promotes personal understandings (e.g., unique mental images, summaries reflecting what the reader perceived as important in the text).
- Students were taught to coordinate strategies: Students were not taught to use strategies in a rigid order—for example, to predict before reading, question and clarify during reading, and summarize after reading, as occurs in reciprocal teaching—but rather were encouraged to use strategies when it seemed appropriate to them and when they felt they needed to be strategic. The goal was for students to become self-regulated strategies users, with the heart of self-regulation being choice, both choosing to be active in general during reading and choosing when to employ particular strategies.

Although the ethnographic studies, interviews, case studies, and analyses of classroom discourse that informed this portrait of transactional strategies instruction suggested that comprehension strategies instruction was effective (e.g., lots of interpretive activity was observed, students who previously experienced reading difficulties seemed to really "get into" reading), such analyses and data do not convince many scholars and educators of the worth of an intervention. These qualitative studies, however, informed a controlled comparison of transactional strategies instruction versus more conventional reading instruction.

Comparative Studies of Transactional Strategies Instruction Versus Conventional Teaching

Brown, Pressley, Van Meter, and Schuder (1996) compared the performance of weak grade 2 readers who were enrolled in classrooms featuring transactional strategies instruction versus classrooms that did not emphasize comprehension instruction. There were five classrooms in each condition of this quasi-experiment. Four of the five control classrooms were more consistent with whole language than any other perspective; one control classroom was skills oriented.

The study occurred over the course of a year, with checks throughout the year to determine whether the classes were consistent with their condition. They were. Although the students in the two types of classrooms were comparable on a variety of reading measures at the beginning of the year, they were not comparable at the end of the year.

At the end of the year, the students in the transactional strategies instruction condition outperformed control students on standardized tests (i.e., tests of word-level skills and, most pertinent here, comprehension). When transactional strategies instruction students were asked at the end of the year to think aloud as they read, they reported using many more strategies than did the students in control classes. Especially impressive at the end of the year, when students in the transactional strategies instruction classes read a story, they remembered more of it later than did participants in control classrooms. In short, at the end of the year, there were many indications of better, more active comprehension and memory for students in the transactional strategies instruction classes compared with students in the control classes.

In addition to the Brown et al. (1996) study at grade 2, there have been two other well-controlled comparisons of students in transactional strategies instruction classrooms and students in more conventional classes. Collins (1991) validated such instruction at the grade 5 and 6 levels. Anderson (1992) did so with middle school and high school students. Moreover, this body of work is consistent with other work establishing that long-term direct explanation and modeling of strategies followed by student practice of the strategies positively affects reading (e.g., Duffy et al., 1987).

That transactional strategies instruction works was established in the quantitative, comparative studies. That transactional strategies instruction can be used profitably in real classrooms also was established in studies like Brown et al. (1996), and in the qualitative studies that preceded it. Even so, that does not mean that transactional strategies instruction is common in the schoolplace, something that was apparent in a recent observational study.

Comprehension Instruction in Elementary Classrooms in the 1990s

It is clear based on the literature reviewed thus far that by the middle elementary grades, students can learn comprehension strategies and can learn to use them to increase understanding and memory of text. Moreover, from even a cursory examination of many published reading programs or professional journals (e.g., *The Reading Teacher*), it is obvious that elementary teachers have been encouraged to teach their students to use comprehension strategies. However, do teachers, in fact, teach comprehension strategies?

As was the case two decades ago (Durkin, 1978/1979), it seems that they do not. Over the course of school year 1995–1996, Pressley, Wharton-McDonald, Mistretta, and Echevarria (1998) observed nine fourth- and fifth-grade classrooms, focusing on the reading instruction occurring in the classrooms. What they found was that each classroom had a very different approach to the teaching of reading. What they did not find was any of the classroom teachers teaching comprehension strategies in anything like the fashion discussed in this chapter.

In fact, the situation seemed much as Durkin described it. Teachers did not teach students how to comprehend; rather, they tested comprehension. To be certain, the tests seemed a bit different from the ones Durkin observed, with the tests informed by the comprehension strategies instructional work even if students were not taught the strategies. We observed many tests requiring students to summarize, identify parts of texts that confused them, generate questions that might be asked of the text, and make predictions based on prior knowledge. The problem, of course, was the tests stimulated such processing of text after the students had completed their reading rather than while students were reading. There was little evidence of students being encouraged to become self-regulated readers in the sense of using on their own the comprehension strategies that good readers use. There was the expectation that students would be self-regulated in their reading, with test questions that tapped the kind of information that a self-regulated reader might be expected to recall from text, but no instruction of those self-regulation processes. The assumption of the teachers seemed to be that if their students simply read, read, and read, and then were tested, tested, and tested, they would become good comprehenders—they would become self-regulated readers who used comprehension strategies. Of course, if that were true, then it would not be the case that whenever students have been taught to use comprehension strategies, their comprehension improves, for such instruction could only have an effect if students were not using such strategies on their own.

Summing Up: Metacognition of Skilled Readers and Skilled Reading Teachers

If the goal is to develop elementary-age children into metacognitively skilled readers, their teachers must first possess some metacognition about reading. Thus, I close this chapter with a discussion of what metacognition is in the skilled reader and the metacognition that teachers need to possess if they are to stimulate the development of appropriate metacognition about comprehension in their students.

The Metacognitively Skilled Reader

What is specifically metacognitive about skilled, self-regulated reading? Recall that metacognition is knowledge about thinking, and metacognition about reading is specifically knowledge about reading and how reading is accomplished. Skilled readers know how to get meaning from text. At the letter and word levels, they know how to decode words and are very cognizant of the need to attend carefully to the individual letters and letter combinations in words that are not immediately recognizable, that sounding out words and blending the sounds is how to recognize unfamiliar words.

Because skilled readers can automatically recognize most of the words they need to read, not much effort is required to decode, however, and hence there is a great deal of cognitive capacity available for comprehension, both of individual words and of the ideas represented by phrases, sentences, and paragraphs. Such cognitive capacity is put to good use by the skilled reader, with the metacognitively sophisticated reader knowing that comprehension is most likely by reading actively; that is, the good reader knows to relate what is being read to prior knowledge, and he or she is aware that good readers predict what might be in upcoming text and relate ideas encountered in text to their prior knowledge. The metacognitively sophisticated reader also knows to ask questions while reading, construct images of ideas being conveyed in text, and summarize what is being read. The metacognitively sophisticated reader knows that good reading involves being alert to the possibility that some parts of text are confusing. He or she knows to react to confusion with fix-up strategies, such as rereading. The metacognitively sophisticated reader knows comprehension strategies, knows to use them, and often does use them.

It is not known how 35-year-old metacognitively sophisticated readers became metacognitively sophisticated. That is for future research to determine. It is known, however, that not many high school graduates and beginning college students are metacognitively mature with respect to reading. In particular, high school students rarely report use of the active comprehension processes described earlier (Pressley & Afflerbach, 1995).

One possibility is that those who advocate the read, read, and read philosophy are correct that decades of extensive reading will result in exceptionally skilled reading, even metacognitively sophisticated reading. If it is accepted that there are nontrivial numbers of high school students who have followed that advisement, however, and accepted as well that there are not nontrivial numbers of metacognitively skilled high school readers, it seems that a single decade of reading, reading, and reading, however, is not enough to produce readers who know comprehension strategies, know to use them when they read, and do use them.

To be certain, one thing that the metacognitively sophisticated reader knows is that it is a good thing to read, read, and read. Such reading increases fluency, which increases comprehension. It also benefits prior knowledge, including vocabulary knowledge (Sternberg, 1987), which facilitates comprehension as well. The point here, however, is that the metacognitively sophisticated reader knows that much more than fluency and prior knowledge is required to understand text. The really good, metacognitively sophisticated reader knows that high comprehension requires active reading: predicting, questioning, imaging, clarifying, and summarizing while reading.

One of the great accomplishments of reading research in the past quarter century is the portrait of the metacognitively sophisticated reader reviewed in this chapter. Unfortunately, less attention has been paid to the metacognition possessed by the sophisticated teacher, so what follows is more speculative because there is no directly relevant data. It is offered as a set of hypotheses that deserves serious study as part of the development of instruction that will result in better readers.

The Metacognitively Sophisticated Reading Teacher

The metacognitively sophisticated reading teacher should know that good readers know, can use, and do use decoding and comprehension strategies when they are needed. He or she also should know that it is important for students to read, read, and read excellent books, for fluency depends on extensive reading and development of background knowledge depends on quality reading. The sophisticated reading teacher recognizes that both fluency and extensive background knowledge contribute to comprehension skill.

Beyond that, however, the metacognitively sophisticated teacher should understand that students are most likely to develop decoding strategies if they are provided explicit instruction as a starting point, including explanations of decoding and word recognition strategies and modeling of their use. That is, the metacognitively sophisticated teacher should be aware at some level of the conclusions offered in other chapters of this volume that explicit decoding and word recognition instruction is more effective than leaving students to discover decoding skills on their own.

The metacognitively sophisticated teacher also should know that comprehension skill does not develop very well on its own, but that the comprehension strategies used by good comprehenders can be taught, beginning with teacher explanations and modeling of the strategies followed by scaffolded student practice of comprehension strategies during reading. Of course, the overarching purpose of placing this chapter in this book is to begin the development of this type of metacognition in teachers. I say "begin" because of some advisement I received from an accomplished comprehension strategies teacher in one of my studies. She told me that she really never understood comprehension until she started to teach comprehension strategies using the transactional strategies instructional approach. Once she started teaching students comprehension strategies, she found herself being more cognitively active during reading and much more aware of what she did to understand demanding texts. If you follow the advisement provided in this chapter and begin to teach comprehension strategies to your students, I suspect that you, too, will experience a dramatic improvement in your comprehension, an increase in your metacognition about comprehension, and new metacognition about the nature of effective teaching of comprehension.

Questions for Discussion

1. Try thinking aloud as you read a magazine article. Do you predict what is going to be in the text? Ask questions? Create mental images? Summarize? In short, how are you active before, during, and after reading?
2. Try being more strategically active when you read. How does it affect your comprehension? If you do become more active as you

read, how might you be in a better position to teach reading comprehension strategies to your students?

3. Can you think of occasions when it is difficult for you to read and understand individual words in a text? Are there ways you can cope so that you can get the most meaning out of the text?

4. Find out how teachers you know are attempting to teach comprehension strategies to their students. Are students being encouraged every day to use comprehension strategies? Are students being taught to use a small repertoire of comprehension strategies? Are they being taught to apply the strategies they learn during reading instruction across the school day?

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Chapter 14

The New Literacies: Research on Reading Instruction With the Internet

Donald J. Leu, Jr.

The essence of both reading and reading instruction has always been change. Reading a book changes us forever; we return from the worlds we inhabit during our reading journeys with new insights about ourselves and our surroundings. Teaching a child to read is also a transforming experience; it opens new windows to the world, creating a lifetime of opportunities for that child. Change has always defined our work as literacy educators. By teaching a child to read, we change the world.

Today, reading and reading instruction are being defined by change in even more profound ways (International Reading Association, 2002). New forms of information and communication technology (ICT) such as the Internet are rapidly generating new literacies required to effectively exploit their potentials (Karchmer, 2001; Leu, 2000a, 2000b; Luke, 2000; Meyer & Rose, 1998; Reinking, McKenna, Labbo, & Kieffer, 1998; Topping, 1997; Warschauer, 1999; Wood, 1999). These technologies also make possible new instructional practices to help children acquire the literacies of their future. Traditional definitions of reading instruction will be insufficient if we seek to provide children with the futures they deserve.

The changes experienced by students who will graduate from secondary school this year teach us an important lesson about changes taking place to the nature of literacy. Many graduates started their school career with the literacies of paper, pencil, and book technologies but will finish having encountered the literacies demanded by a wide variety of digital information technologies: word processors, CD-ROMs, World Wide Web browsers, Internet-based editors, e-mail, and many others. These students have experienced new literacies at the end of their schooling unimagined at the beginning. Given the increasingly rapid pace of change in the technologies of literacy, it is likely that students who begin school this year will experience even more profound changes during their literacy journeys. Moreover, this story will be repeated many times as new generations of students encounter yet unimagined technologies of information and communication as they move through school and develop yet unimagined new literacies.

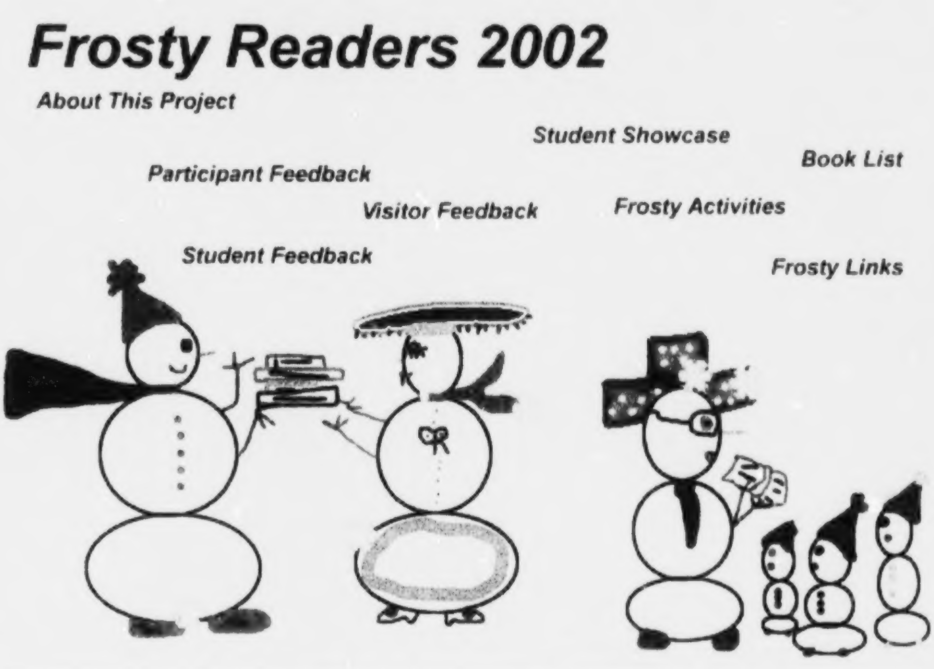
We can see the beginning of these changes in the unprecedented rate in which the Internet is entering school classrooms around the world. Consider the example of the United States: In 1994, only 3% of K–12 classrooms had a computer connected to the Internet (National Center for Education Statistics, 2000); in 2000, 77% of U.S. classrooms had an Internet-connected computer (Cattagni & Farris, 2001). At this rate, it is expected that nearly every U.S. classroom will have an Internet-connected computer within several years. Similar changes are taking place in the United Kingdom, Ireland, Finland, Australia, New Zealand, and other countries (Leu & Kinzer, 2000). By any measure, this is unprecedented change; never before has such a powerful technology for literacy entered so many classrooms in such a short period of time. The Internet has entered our classrooms faster than books, television, computers, the telephone, or any other technology for information and communication. Moreover, the Internet will be the vehicle for a host of new technologies that will continue to enter the classroom, regularly requiring new literacies from all of us (Leu, 2000a).

Exploring New Literacies on the Internet

You may view evidence of the new literacies being developed in schools around the world by visiting the International Reading Association's electronic journal *Reading Online* (http://www.readingonline.org). You may also view this evidence at the International Reading Association's site for the "Miss Rumphius Award" (http://www.reading.org/awards/rumphius.html), an award given by members of the RTEACHER listserv (http://www.reading.org/publications/rt/rt_listserv.html) to educators who create exceptional Internet resources for literacy and learning for all of us to use on the Internet. You also might use the Internet to visit the many classrooms where profound changes are taking place in the nature of reading and writing. These teachers share important lessons about the new literacies.

Some of the new literacies emerge from project-based learning experiences with Internet technologies (Leu, 2001). You can see these taking place by visiting Marjorie Duby and her fifth-grade students (http://lee.boston.k12.ma.us/d4/trav/lroot.html) at the Joseph Lee School in Boston, Massachusetts. Duby is one of the most accomplished developers of travel-buddy projects, collaborative Internet projects based on stuffed animals that travel from classroom to classroom, sparking reading and writing experiences by means of the Internet. You also might visit Susan Silverman's classroom site in Port Jefferson, New York (http://www.kids-learn.org). Silverman supports research projects for teachers and children, inviting classrooms to contribute their results, and then posts the work from these classrooms at her site, developing an important resource for still other classrooms to use. Recently, Patricia Knox and Silverman have teamed up to develop "Frosty Readers" (see Figure 14.1). You may also see these new forms of literacy in space science projects, such as "Women of NASA" (http://questdb.arc.nasa.gov/content_search_women.htm), in which classrooms from all parts of the world collaborate with scientists as they explore important scientific questions.

Figure 14.1. Frosty Readers project site (http://www.comsewogue.k12.ny.us/~ssilverman/frosty2002)


Frosty Readers 2002
About This Project
Student Showcase
Book List
Participant Feedback
Visitor Feedback
Frosty Activities
Student Feedback
Frosty Links
QR

New literacies of cross-cultural understanding also emerge as the Internet enters our classrooms. You can see these by visiting the Hobart-Malang Electronic Mail Project developed between students in Tasmania and Indonesia by Peter Lelong, Ibu Wahyuni, and others (http://www.fahan.tas.edu.au/archives/narrate.html). You could also visit Book Raps (http://rite.ed.qut.edu.au/oz-teachernet/projects/book-rap/index.html), a location initially managed by Cherrol McGhee, a teacher at the Hillview State Primary School in Queensland, Australia. Here, children from around the world engage in literature discussion groups about common works of literature they have read, exchanging insights about the world from a variety of cultural perspectives. You also might visit the location developed by Cheryl Cox—Cinco de Mayo (http://www.zianet.com/cjcox/edutech4learning/cinco.html)—another example of how the Internet may be used to develop broader cultural understandings through new forms of reading and writing.

You also might explore the new literacies of video conferencing by visiting the sites developed by Hazel Jobe, a former Title I reading/language arts teacher at Marshall Elementary School in Lewisburg, Tennessee, USA (http://www.marshall-es.marshall.k12.tn.us/jobe/vcsuggest.html, and http://www.marshall-es.marshall.k12.tn.us/jobe/Read-Write/environment/adventures.html). Jobe and her students use this emerging technology to interview scientists about the natural world. They also exchange the results of their study in videoconferences with classrooms around the world.

Finally, you might visit Room 100 at Buckman Elementary School in Portland, Oregon, USA (http://buckman.pps.k12.or.us/room100/room100.html) to see the new literacies younger children may achieve. Beth Rohloff and Tim Lauer published their K–2 students' work on this classroom homepage, making it available to other primary grade classrooms around the world. All of these examples from the Internet, and many more, represent fundamental changes taking place in the nature of reading, writing, and literacy education.

What Are the New Literacies?

The new literacies include the skills, strategies, and insights necessary to successfully exploit the rapidly changing information and communication technologies that continuously emerge in our world. A more precise definition of the new literacies may never be possible, because their most important characteristic is that they regularly change; as new technologies for information and communication continually appear, new literacies emerge (Bruce, 1997; Leu, 2000a; Reinking, 1998). Moreover, these changes often take place faster than we are able to thoroughly evaluate them. Regular change is a defining characteristic of the new literacies.

This simple observation has profound consequences for literacy and literacy education. The continuously changing technologies of literacy mean that we must help children *learn how to learn* new technologies of literacy. In fact, the ability to learn continuously changing technologies for literacy may be a more critical target than learning any particular technology of literacy.

A second aspect of the new literacies is that they are increasingly dependent on the ability to critically evaluate information. Open networks, such as the Internet, permit anyone to publish anything; this is one of the opportunities this technology presents. It is also one of its limitations; information is much more widely available from people who have strong political, economic, religious, or ideological stances that profoundly influence the nature of the information they present to others. As a result, we must assist students in becoming more critical consumers of the information they encounter (Alvermann, Moon, & Hagood, 1999; Muspratt, Freebody, & Luke, 1996; The New London Group, 2000). Such skills have not always been important in classrooms, where textbooks and other traditional information resources are often assumed to be correct.

A third aspect of the new literacies is that they include the new forms of strategic knowledge necessary to locate, evaluate, and effectively use the extensive resources available within complexly networked ICT such as the Internet. The extent and complexity of this information is staggering. Moreover, these already extensive resources increase each day as new computers are connected to networks and as people create new information and publish it for others to use. The extensive information networks of ICT require new forms of strategic knowledge to exploit them effectively. How do we best search for information in these complex worlds? How do we design a Web page to be useful to people who are likely to visit? How do we communicate effectively with videoconference technologies? Strategic knowledge is central to the new literacies.

A fourth aspect of the new literacies is that they are highly social. Literacy has always been a social phenomenon, but the new literacies contain even more of a social component than traditional literacies. The technologies of literacy change too quickly and are too extensive for us to be literate in them all. Each of us, however, will know something useful to others. Reading an instructional manual for a new technology, for example, is often less efficient than simply asking another student who is familiar with the software for help. Social learning strategies, such as knowing who knows what type of information and how to quickly exchange it, become essential when literacy technologies rapidly change.

Social learning strategies also become important because networked technologies for literacy permit us to communicate more extensively with people around the world. Much of the new information that becomes available on the Internet resides in the people who use it, not in isolated texts. To access this type of information, we must develop new social components to our literacy skills. Teachers who engage their classes in collaborative projects with other children around the world are preparing them in important ways for their future with networked ICT.

A fifth aspect of these new literacies is that they provide special opportunities to help us better understand the unique qualities in each of our cultural traditions. The new literacies allow our students to immediately communicate with others around the world from different cultural contexts and, in that communication, develop new understandings about the many different ways of knowing that exist in the world. The extent of this opportunity has never before existed in school classrooms. The new literacies enable us to develop more complex, richer, and more powerful definitions of multicultural education, helping us to better understand the diverse nature of our global society (Leu, 1997b).

Finally, it should be understood that the new literacies build on but do not usually replace previous literacies. Traditional elements of literacy will continue to be important within the new literacies. In fact, it could be argued that they will become even more important. The ability to read text will become more important because it allows us to access information faster than listening, and speed counts in rich, complexly networked information environments (Leu & Kinzer, 2000). The ability to write text will become more important because written text can be easily stored and organized to generate new knowledge. Although reading and writing abilities become more important in the new literacies, they will also change in important ways (Eagleton, 1999). Reading and writing will take new forms as text is combined with new media resources and linked within complex information networks requiring new literacies for their effective use.

Why Are the New Literacies Important?

Not everyone is sanguine about the consequences of new technologies for education. In fact, many critics raise important concerns about rushing to embrace these new technologies in the classroom (Birkerts, 1994; Cuban, 1986; Healy, 1998; Oppenheimer, 1997; Rochlin, 1997; Roszak, 1994; Stoll, 1995). Most of their arguments focus on the lack of teacher preparation, the inappropriate use of technology in the classroom, and the relative cost of technology in comparison to other educational needs; they do not demonstrate hard data on the inability of new technologies to support learning and higher achievement.

Although there is limited evidence that computer technologies do produce learning gains (Follansbee, Hughes, Pisha, & Stahl, 1997; Kulik & Kulik, 1991; Kulik, Kulik, & Bangert-Drowns, 1990; President's Committee of Advisors on Science and Technology: Panel on Educational Technology, 1997), arguments over efficacy issues may be of little value in a world where new technologies change at a rate that exceeds our ability to comprehensively evaluate their potential for literacy and learning in the classroom (Leu, 2000a; Leu & Kinzer, 2000). Efficacy studies also may be less useful if one recognizes that literacy in one context may not be identical to literacy in a different context. How, for example, should one compare comprehension within a traditional text and within a rich and complexly networked information resource such as the Internet in which each user may take a completely different path and acquire different information about a subject? Moreover, new aspects of meaning construction become far more important in complexly networked information resources such as the Internet. Speed, for example, becomes far more important. The ability to locate useful resources and critically evaluate their utility in relation to the task demands also becomes more important. Locating useful resources quickly becomes just as important as comprehending those resources.

Perhaps simple observation about the changing nature of literacy provides more powerful data than any set of efficacy studies. If, for example, one concludes that networked ICTs have become central to success in the workplace or in higher education, why should we waste valuable time and energy demonstrating their efficacy over earlier technologies? To do so means an extensive research effort to demonstrate the obvious.

Many argue we have entered a historical period in which it is no longer land, labor, or capital that defines one's life opportunities (Bruce, 1997; Mikulecky & Kirkley, 1998, 1999; Reich, 1992; Rifkin, 1995). They note that work is increasingly characterized by the effective use of information resources to solve important problems within a globally competitive economy. Because networked, digital technologies provide greater and more rapid access to larger amounts of information, the effective use of information skills such as reading and writing become even more important in competitive workplace contexts (Gilster, 1997; Harrison & Stephen, 1996). As a result, reading comprehension, problem solving, information access, and communication are essential to success. The Internet and other networked technologies will be increasingly important to enable individuals to access the best information in the shortest time as they solve important problems.

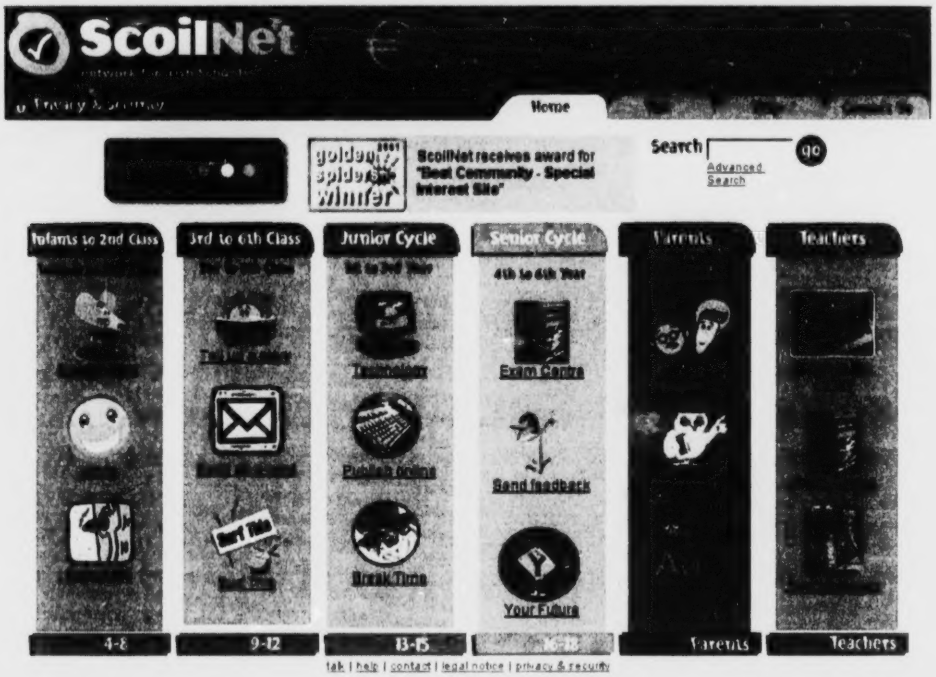
Many nations have come to this conclusion, including Australia, Canada, Finland, Ireland, New Zealand, the United Kingdom, and the United States. Recognizing the importance of preparing citizens to compete in a global information economy, these countries have recently launched educational initiatives that will lead to a convergence of literacy instruction and the Internet (Leu, 2000b; Leu & Kinzer, 2000). The similarity in public policy initiatives around the world is startling. Although each country is responding to the educational challenges of global competition in a distinctive fashion, nearly every country is articulating higher standards or benchmarks for literacy, is testing on an annual basis to monitor progress, and is supporting schools with the enormous expense of infusing Internet technologies into the curriculum. You may see evidence of this work at the Internet locations developed in many of these countries to support educators, parents, and children:

- EdNA (Australia), http://www.edna.edu.au
- SchoolNet (Canada), http://www.schoolnet.ca/home
- ScoilNet (Ireland), http://www.scoilnet.ie (see Figure 14.2)
- Te Kete Ipurangi (New Zealand), http://www.tki.org.nz
- The National Grid for Learning (United Kingdom), http://www.ngfl.gov.uk/index.jsp?sectionId=1&categoryId=99

What Do We Know About the New Literacies?

Any realistic analysis of what we know about the new literacies from the traditional research literature must recognize that we actually know very little. Intuitively, it is easy to recognize that new technologies such as those used for e-mail, Web browsing, videoconferencing, multimedia composing, or media viewing require new forms of literacy. The

Figure 14.2. ScoilNet: The resource for educators in Ireland (http://www.scoilnet.ie)


ScoilNet
Home
Search
go
Advanced Search
golden spider winner 2001
ScoilNet receives award for "Best Community - Special Interest Site"
Infants to 2nd Class
3rd to 6th Class
Junior Cycle
Senior Cycle
Parents
Teachers
4th to 6th Year
Technology
Publish online
Break Time
Exam Centre
Send feedback
Your Future
4-8
9-12
13-15
Parents
Teachers
talk | help | contact | legal notice | privacy & security

important question, however, is how can we support them in the classroom? The answers to this question are not yet clear.

There are several reasons for this. A central issue is the failure of the literacy community to recognize the importance of the changes taking place. It may be that those of us who have constructed careers around the book will be the last to recognize the fundamental changes taking place in the nature of reading and writing (Leu, 2000b). Kamil and Lane (1998), for example, report that during a recent 5-year period, only one study appeared that investigated reading within computer technologies. Although a few studies are now beginning to emerge from the literacy community (e.g. Eagleton, 1999; Karchmer, 2001; Labbo, 1996), even the most recent *Handbook of Literacy and Technology* (Reinking, 1998) notes the paucity of hard data on issues of literacy and technology. As Reinking notes in the introduction, "Collectively, the rich and varied questions offered or suggested by the authors whose chapters follow far exceed current efforts to collect data that might address those questions" (p. xxvii).

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Much of the empirical work that might be used to inform our understanding of new literacies comes from the information technology (IT) community (e.g., Ayersman, 1996; Chen & Rada, 1996; Dillon & Gabbard, 1998; Mayer, 1997; U.S. Congress, 1995) and the growing community exploring issues in computer-mediated communication (CMC) (e.g., Jones, 1999). This work, however, provides data that are only indirectly related to questions of literacy in classroom learning contexts. Usually, the work evaluates adult performance; takes epistemological approaches less familiar to many in the literacy research community; often focuses separately on either learning or communication, not literacy, outcomes; or evaluates these outside classroom contexts. Clearly, part of our effort to understand the new literacies must be devoted to forging closer links with these related research communities as we explore issues of classroom instruction.

There is also a second challenge we face as we study the new literacies: Literacy has become deictic (Leu, 1997a, 2000a). *Deixis* is a term used by linguists to describe words whose meanings change quickly, depending on the time or space in which they are uttered (e.g., *now, here, today, there*, etc.). Both the forms and functions of literacy have changed regularly over time. The current historical period is unique, however, because the forms and functions of literacy are changing rapidly as new technologies for information and communication emerge and as new envisionments for their use are constructed. This will continue into the future at a rapid rate, turning *new literacies* into *traditional literacies* and creating even *newer literacies* on a regular basis. As a result, traditional forms of research will always be somewhat behind the "newer literacies" that begin to appear in the curriculum. A deictic perspective suggests that we have to be more cautious as we attempt to find connections to new technologies of literacy from research that took place with older technologies.

Common Patterns Across Technologies

One of the more common patterns we find in hypermedia and networked technologies for information and communication is that they generate greater interest and motivation. This is true for both students and teachers (U.S. Congress, 1995). Reinking (in press) suggests readers are more engaged with hypermedia texts because they promote a more active orientation to reading, are easier to read for most readers, meet a wider range of social and psychological needs, and make reading a more creative and playful activity. This may be because students feel a sense of greater control during hypermedia experiences. Becker and Dwyer (1994) report that the ability to respond to the needs of an individual learner for information results in an increased sense of control over the learning environment and higher levels of intrinsic motivation. There have been similar results reported with hypermedia authoring tools among sixth-grade language arts students (Finkelman & McMunn, 1995), who valued the greater control over their presentation, in the extensive data presented by Tierney and his colleagues (Tierney et al., 1997), and in a recent study by Eagleton (1999).

Preservice and inservice teachers taught how to use hypermedia tools for teaching and learning (Reed, Ayersman, & Liu, 1995a, 1995b) also reported positive attitudes. These teachers were most attracted to these new technologies because they saw the potential for teaching and learning and because they valued the learner-controlled nature of hypermedia learning environments.

The Internet also permits greater control by teachers and students as they navigate rich information resources and construct meanings appropriate to their teaching and learning needs. Students engaged in an online project over the Internet report increased confidence in carrying out and presenting a research project with this even newer technology (CAST, 1996; Follansbee, Hughes, Pisha, & Stahl, 1997). Teachers in this same study, many of whom were using the Internet for the first time, reported greater use of Internet technologies after the project was completed.

This general pattern of results in interest and motivation may help us to overcome an important paradox: Although technologies are becoming more widely available, they are not always appropriated by teachers and systematically integrated into the curriculum (Becker, 1993; Miller & Olson, 1994; U.S. Congress, 1995). More open information and communication environments such as the Internet permit both teacher- and student-directed learning activities, thus inviting teachers from a wider spectrum of beliefs into this new learning context (Leu et al., 1998). The same is not true for earlier, skill-oriented software, which is only consistent with more teacher-directed beliefs. Becker (1999) and Karchmer (2001), however, have found that early adopters of Internet technologies for classroom instruction tend to have more constructivist beliefs. It may be that teachers with more teacher-directed beliefs also will use this technology, but will be slower in adopting it for classroom use.

A second area that has drawn substantial research attention has been the extent to which these contexts for new literacies generate greater gains in comprehension and learning (Ayersman, 1996; Chen & Rada, 1996; Dillon & Gabbard, 1998). Most of this work has come from the IT community. The most recent review of work with hypermedia, not Internet, technologies (Dillon & Gabbard, 1998) notes the many problematic aspects of this research literature and suggests that little or no gains accrue for comprehension. I have already suggested, however, that efficacy studies may explore moot questions if we already know that effective use of networked environments for information and communication will be required in higher education and the workplace. The President's Committee of Advisors on Science and Technology (President's Committee of Advisors on Science and Technology: Panel on Educational Technology, 1997), a prestigious panel of scientists and educational researchers in the United States, recently took a similar position. They argued that ICT and other digital technologies were so central to the future of the United States that additional data on their efficacy were unnecessary before moving to systematically integrate these technologies into schools.

What *is* important to study are the conditions within new technologies that lead to gains in comprehension and learning. This information can inform teachers and others about how best to use these new technologies in the classroom. Studying the effects on comprehension and learning between different instructional practices, various individual differences, and different types of tasks, for example, can inform us in useful ways.

Unfortunately, the work in these areas has not yet produced a consistent body of results (Dillon & Gabbard, 1998). Limited evidence suggests field-independent learners may perform better in hypermedia contexts than field-dependent learners (Marrison & Frick, 1994; Weller, Repman, Lan, & Roose, 1995). Work in earlier technologies suggested they may be less interesting to young girls (Durndell, 1990), although newer technologies with greater opportunity for collaboration, conferencing, and networking experiences may be more inviting (Eldred & Hawisher, 1995; Lay, 1996). Finally, some evidence suggests that the ability to quickly search through hypermedia contexts favors higher ability students over lower ability students, especially when the information context is very rich (Dillon & Gabbard, 1998).

Another area that has been explored is the effect of task differences on comprehension with new technologies. Tasks within the new technologies of information and communication are not alike (Jonassen, 1993). Some require you to search for a specific piece of information. Others are far more complex, requiring you to gather and organize multiple information resources, evaluating their appropriateness as you work to solve a complex problem. Within IT, tasks have been analyzed in many ways. A common distinction, however, is between closed and open tasks (Chen & Rada, 1996; Marchionini, 1989), or search and browsing tasks (Rada & Murphy, 1992). Closed or search tasks tend to focus on locating specific, factual information, within complex information environments. An example would be finding the answer to a question such as, What is the population of New Zealand? Open or browsing tasks tend to have open goals, often requiring users to find, evaluate, and integrate information from several sources.

In a review of earlier technologies, Chen and Rada (1996) found hypertext yielded significantly greater effect sizes for open tasks than closed tasks on measures of effectiveness. This suggests the more complex and rich information resources characteristic of hypertext systems may be especially suited for the effective completion of cognitively complex tasks.

A final general pattern also should be noted in this work: Much of the work in the new technologies of literacy tends to focus on outcome measures from traditional text environments. It does not always evaluate aspects of performance unique to the new contexts for literacy in an information age. For example, the speed with which an individual can locate the highest quality information available is an important concern in a richly networked technology for information and communication such as the Internet. In addition, the ability to quickly evaluate the utility of different information resources for a specific problem also becomes important. Neither of these outcome measures has been important in the traditional research on reading comprehension, but they need to be central outcome measures in future research.

Research on Specific Applications

Three specific types of applications require attention because they are either common in school classrooms or will be shortly: talking storybooks, Integrated Learning Systems (ILS), and the Internet. Talking books are hypermedia texts with digitized pronunciations of words and larger textual units, often with animated illustrations and other features.

Although talking storybooks are designed to improve comprehension and reduce the decoding difficulties experienced by beginning readers, most work evaluating their potential has studied their use among students 8 years or older experiencing difficulty in learning to read (e.g., Farmer, Klein, & Bryson, 1992; Greenlee-Moore & Smith, 1996; Lundberg & Olofsson, 1993; Miller, Blackstock, & Miller, 1994; Olson & Wise, 1992). Fewer studies have explored the potential of talking storybooks for younger children at the very beginning stages of reading, although a few studies have been done with this population (Lewin, 1997; McKenna, 1998; Reitsma, 1988). Generally, studies show that comprehension increases when children can access digitized speech support. There is some indication (Miller et al., 1994; Olson & Wise, 1992; Reitsma, 1988) that decoding ability may also increase. Future work needs to explore the relationship between these two patterns for different populations, as well as explore optimal software designs, especially strategies to connect reading and writing within these contexts. This is important given recent work by Labbo (1996) showing the importance of early writing experiences within multimedia software.

Another area of recent research is on the use of networked information environments such as ILS. Integrated learning systems are networked systems that provide individual instruction on skills important to different subject areas. They tend to follow a more direct instructional model for instruction. The research on ILS does not show many learning gains over other instructional approaches. A large meta-analysis of almost 100 ILS studies showed many methodological flaws and little evidence of ILS gains on achievement (Becker, 1992).

The Internet is arguably the most powerful technology available to support reading and writing experiences in the classroom, and it is clear from the earlier discussion that this technology will be in many classrooms around the world. A growing body of work is beginning to recognize this change (Garner & Gillingham, 1996; Peha, 1995). However, there is relatively little empirical evidence evaluating the Internet's effectiveness in supporting reading and writing in the classroom.

The largest, most systematic work is a study of 500 students in grades 4 and 6 in seven urban school districts around the United States (CAST, 1996; Follansbee et al., 1997). Each classroom completed an integrated learning unit on civil rights using a common curricular framework and common activities in one of two conditions. Control classrooms were encouraged to use traditional library resources as well as technology resources, including computers and multimedia software. Experimental classrooms used these resources as well as the Internet for online resources, activities, and communication.

During the unit, students completed a project in small groups using the available resources. These projects were evaluated on several dimensions to compare performance in treatment conditions. Evaluation of the final project showed significantly greater achievement on a number of measures for classrooms using Internet resources. The mean overall score for projects was higher for experimental groups, but only approached significance.

Becker (1999), in a national survey of teachers in the United States, reported an interesting snapshot of Internet use at that time. Nearly 90% of teachers in this survey reported that they considered Internet resources as either "valuable" or "essential." This study also found that 18% of teachers had already posted information or student work on the Internet and that the World Wide Web was the third most frequently used technology in the classroom (29%), behind the use of word processing (50%) and CD-ROMs for reference (36%). Among teachers with high-speed connections, 30% of teachers reported using the Internet for more than 10 lessons during the year, suggesting that as faster connections appear in schools, the Internet will be used more frequently for instruction.

A disturbing pattern appears to exist with respect to who has Internet access in the classroom, at least in the United States, however. Data from the U.S. Department of Education in 1999 indicate that schools in which less than 11% of the students are eligible for free or reduced-price lunches have twice as much Internet access in the classroom as schools in which 71% or more of the students are eligible for free or reduced-price lunches (National Center for Education Statistics, 2000). Given the increasing disparity in incomes in some countries, such a trend in societies that profess egalitarian ideals, if maintained, presents an important threat to the long-term political stability of these countries.

The emerging work on Internet use in the classroom provides us with a beginning picture of how it is used and what the potentials are for this technology. Clearly, we require a larger, consistent body of work in this area before conclusive claims may be made. We also require important new work evaluating how teachers optimize learning within the Internet, how new envisionments for literacy are initiated by this resource in the classroom, how the Internet may restructure traditional student-teacher relationships, and a host of issues related to the use of Internet technologies in classroom settings. It is likely this will soon become the most important area of research as Internet resources enter classrooms around the world.

Research on Teacher Education and Staff Development

One of the greatest challenges to the effective use of technology for reading and writing instruction is teacher education and staff development. In the United States, for example, only half the states require computer education for licensure. Of these, only two (North Carolina and Vermont) require students to demonstrate their ability with technologies within a portfolio (CEO Forum, 1999). Further, only 3 states require technology training as a prerequisite for licensure renewal, and only 14 states require districts to spend a certain proportion of technology funds on professional development (CEO Forum, 1999). Initial steps are taking place in this area (Kinzer, Labbo, Leu, & Teale, 2001; Kinzer & Risko, 1998), but a much more widespread commitment to teacher education in the technologies of literacy is clearly necessary.

The challenges in staff development will be enormous. Consider, for example, the results of a recent survey in the United States, where only one in five full-time public school teachers report feeling very well prepared to integrate educational technology into classroom instruction (U.S. Department of Education, 1999a). This may be due to the woefully inadequate efforts devoted to staff development in the new literacies. School districts in the United States spend, on average, only 20% of the recommended amount of their technology budget on staff development (CEO Forum, 1999; U.S. Department of Education, 1999b). Clearly, staff development in the use of new technologies such as the Internet needs to be an important priority.

Thinking About New Ways of Knowing

It appears that technology may be changing faster than our ability to evaluate and communicate its utility for literacy using traditional research approaches (Leu, 2000a; Leu, Karchmer, & Leu, 1999). Sometimes, an even newer technology or a new version of an older technology replaces the technology on which a study is based, before we can develop an extensive and consistent body of published research within traditional forums. If this continues, traditional research may play an increasingly less important role in our understanding of new literacies.

Instead, it may be that teachers' and others' envisionments about literacy may become increasingly important in defining new literacies for the classroom. Teachers and children can evaluate these new literacies and quickly spread word about an especially useful strategy on the Internet faster than traditional forms of research.

What Can We Reasonably Conclude About the New Literacies?

Given the many changes taking place in literacy from the changes in technology (Reinking et al., 1998) and the envisionments these technologies inspire (Bruce, 1997; Leu et al., 1999), any conclusions must be framed cautiously. Often, conclusions must verge on the edge of predictions because change happens so quickly. Given this conditional preface, let us look at what might be reasonably concluded about the new literacies.

Change Is a Defining Element of the New Literacies

New literacies are new literacies not because they appear now, but because they will *continuously appear* as new technologies for information and communication regularly emerge and as people regularly construct new envisionments for how they might be used. The dynamics of continuously changing literacies have profound consequences for literacy education from classroom instruction, to assessment, and especially to teacher education. Adapting to change and learning how to learn unfamiliar technologies for information and communication will be critical components of the new literacies.

Assessment also will be redefined regularly in our digital futures. The challenge will be to develop assessment systems that keep up with the continually changing nature of literacy so that assessment data provide useful information for planning. This may be a challenge if new literacies appear frequently.

In this regard, it should be noted that not a single state reading assessment in the United States currently evaluates reading on the Internet and not a single state writing assessment permits the use of anything other than paper and pencil technologies. This is so despite evidence that the nature of reading is changing on the Internet and despite evidence that students do significantly better on a state writing assessment when they are permitted to use word-processing technologies (Russell & Plati, 2000). Clearly, in an age when literacy assessment has become increasingly important, it is imperative that we get assessment right, including the new literacies of the Internet and other ICT.

The New Literacies Build on Previous Literacies

New literacies complement and build on traditional literacies. Reading and writing will always be central to the new literacies, but each will be changed in important ways. Reading will require similar types of vocabulary knowledge, for example, but new strategies for locating, evaluating, and using information will be required. Writing will require similar types of spelling knowledge, but new strategies for structuring text and other media forms will be required.

The New Literacies Require New Forms of Strategic Knowledge

Mayer (1997) reminds us that each technology contains different contexts and resources for constructing meanings and requires somewhat different strategies for doing so. New technologies for networked information and communication are complex and require many new strategies for their effective use. Moreover, the future will see these technologies continue to change. Thus, the new literacies will be largely defined around the strategic knowledge central to the effective use of information within rich and complexly networked environments. There will be many types of strategic knowledge important to the new literacies.

The New Literacies Involve More Critical Reading of Information and Provide New Definitions of Multicultural Education

Because networked information technologies invite more and diverse people to exchange information, the new literacies require us to read more critically and they enable us to develop new insights about more cultural traditions and ways of knowing than we have ever experienced. Being sensitive to this diversity and developing more critical reading skills within networked ICT will be an important aspect of the new literacies.

The New Literacies Are, to a Large Extent, Socially Constructed

Early evidence (Labbo, 1996; Labbo & Kuhn, 1998), as well as logical deduction from current trends, suggests that the new literacies will be ever more dependent on their social construction than traditional literacies. It will be impossible for every child to become expert in every new technology for information and communication that appears. As networked information resources become more extensive and complexly structured, and as ICTs continue to change with some frequency, no one person can be expected to know everything there is to know about the technologies of literacy; these technologies will simply change too quickly and be too extensive to permit any single person to be literate in them all. Each of us, however, will know something useful to others. This will distribute knowledge about literacy throughout the classroom, especially as students move above beginning stages. One student may know the best strategies for developing a hypermedia presentation, whereas another knows the best way to use a new video conferencing technology. We will need to support children in learning how best to learn from others. Each of us will have a certain level of understanding of core technologies that meet our needs. For other technologies, we will need to rely on others expert in those technologies to show us how things are accomplished. Internet Workshop and other collaborative approaches will be especially useful (Leu & Leu, 2000).

The social construction of meanings in our texts also will be facilitated by the technologies themselves. Because the new technologies increase our connections with others, we will have the opportunity to develop a wider understanding of how others understand the texts we create. The new literacies will require us to develop even greater appreciation for the wider interpretations that are possible to any text we create. New opportunities for supporting children in understanding their multiple audiences will be possible and central to the effective use of networked technologies for information and communication.

Interest and Motivation Provide Special Opportunities for Supporting New Literacies

One of the more compelling and consistent findings from the research literature in this area is that children are highly motivated and interested in the new literacies (Reinking, in press; U.S. Congress, 1995). The same appears to be true for at least some teachers (CAST, 1996; Follansbee et al., 1997; Reed et al., 1995a, 1995b). That the new contexts for literacy appear to be highly motivating may provide special opportunities for supporting children in acquiring the new literacies and special opportunities to support the important staff development and teacher education efforts that lie ahead. It is possible that more student-directed learning experiences in the new literacies may be especially useful.

That children may be especially interested in the new literacies, however, is a double-edged sword. One wonders if this will mean less interest in the more traditional literacies that form an important foundation for the new literacies. Perhaps we will need to consider how best to support these initial steps within the more engaging possibilities of hypermedia (Reinking, in press) and networked information and communication technologies.

The Teacher's Role Becomes Even More Important Within the New Literacies

Internet resources will increase, not decrease, the central role teachers play in orchestrating learning experiences for students. Teachers will be challenged to thoughtfully guide students' learning within information environments that are richer and more complex than traditional print media, presenting richer and more complex learning opportunities for both them and their students. This, alone, would make teacher education and staff development issues important priorities. In addition, however, we must recognize that as the new literacies continually change, new staff development and teacher education needs will emerge. Our educational systems have never before faced the professional development needs that will occur. Neither staff development efforts nor teacher education programs have responded adequately to this challenge. Staff development is currently underfunded by a factor of five; school districts in the United States only spend, on average, 20% of what is recommended on staff development in the classroom use of technology (CEO Forum, 1999; U.S. Department of Education, 1996). Perhaps even greater attention needs to be devoted to teacher education. As the recent report from the National Council for Accreditation of Teacher Education (1997) notes, "Not using technology much in their own research and teaching, teacher education faculty have insufficient understanding of the demands on classroom teachers to incorporate technology into their teaching."

Around The World, Governments Are Investing in the New Literacies

We have seen how national governments, in an effort to prepare their citizens for global, economic competition in an information economy, are raising literacy standards and infusing networked technologies for information and communication into the curriculum. What is significant about this movement is that it is happening in many nations with a limited history of federal intervention in educational policy. In the United States, more than 2 billion dollars are being spent each year by the federal government to support Internet connections. In Australia, a national plan has been developed to raise literacy levels and integrate technology into the curriculum. A national website for classroom teachers also is being developed. In New Zealand, national plans are being developed to infuse technology into the curriculum and to raise literacy standards. In the United Kingdom, a major effort is underway to integrate IT into the curriculum and to focus attention on increasing literacy achievement. In Ireland, similar national policies are being implemented. National governments are changing how they respond to educational issues because they perceive new literacies to be important to their children.

Conclusion

We are only able to see the beginning outlines of what the new literacies will be and how to support their development. Clearly, we have much to learn about these new forms of literacy. It does appear that change will be an important part of their definition and that our response to this change will determine how prepared our children will be for their future. The reading community needs to play a central role in this conversation, a role that has yet to be filled adequately. Our work must begin to focus on how these new technologies are changing reading, the touchstone of our common work, and how we can best support teachers and children in their use. There is not a more important issue for us in the years ahead. For some, change will be difficult, because many of us have built our careers around the book. For all of us, change is essential if we hope to prepare children for their literacy future.

Questions for Discussion

1. Visit this site with links to the classrooms of many teachers who use the Internet in exemplary ways: http://www.reading.org/awards/rumphius.html. Explore several locations. What new forms and functions of literacy do you encounter? How might these prepare children for their literacy future?

2. Discuss the changes to literacy instruction, assessment, staff development, and public policy that result from rapidly changing technologies of literacy. List three things you believe we should do in each area and indicate why these actions, and not others, should be taken.

3. If teachers develop networks and share information about "best practices" with the new technologies of the Internet, replacing traditional research paradigms, what criteria should we use to determine when an instructional practice might be more useful than another practice?

4. Visit several of the national sites listed on page 317, which are designed to support educators using Internet technologies in their classrooms. What common patterns do you find at these locations? Why are these found in different countries?

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Chapter 15

Standards, Assessments, and Text Difficulty

Elfrieda H. Hiebert

Example 1: Every morning, when the farmer woke up, the first thing he saw was the roof of his little house. Every morning for breakfast he ate two flat cakes of ground corn. His wife had made them the night before. From *Hill of Fire* (Lewis, 1971, p. 10)

Example 2: "Absolute silence," Papa whispered as the four of them slipped out to the street. The family walked and walked, past all the familiar houses and buildings in their neighborhood, being careful to hide in whatever shadows the creeping sunrise left undisturbed. From *The Night Crossing* (Ackerman, 1994, pp. 25–26)

These excerpts come from texts that two different policy groups have identified as grade appropriate for third graders. The time of day in each of the examples is a critical part of the text's context. In Example 1, most third graders are likely to understand the farmer's early morning routine from the repetition of the phrase "every morning." A significant portion of third graders may not grasp the time of day in Example 2 implied by the phrase "shadows the creeping sunrise left undisturbed." Their cognitive resources may be spent in figuring out words and phrases such as *absolute silence*, *whispered*, *shadows*, and *undisturbed*, leaving few resources to establish that the family in the second example is fleeing their home and that the rise of the sun presents hazards.

These two texts illustrate the dilemma confronting many teachers and their students. Standards and the assessments designed to ascertain students' attainment of these standards have proliferated over the past decade (American Educational Research Association, 2001); this movement is likely to gain momentum with new federal initiatives. In federal and state literacy initiatives, an often-stated goal is for U.S. schoolchildren to be proficiently reading grade-appropriate text by the end of third grade (U.S. Department of Education, 2001). The frequent and consequential use of the phrase *grade-appropriate text* in national and state policies suggests well-researched views of the proficiencies that distinguish between those students who read, for example, second-grade texts and those who read third-grade texts. This maelstrom of activity around standards and accompanying assessments follows a dramatic shift in the types of texts used in reading instruction. As a result of the dissemination of research on readability from the 1980s (Anderson, Hiebert, Scott, & Wilkinson, 1985), readability formulas are no longer used in the creation of textbook programs. Educators welcomed the demise of readability because of its constricting effect on school texts (Green & Davison, 1988). However, there have been few descriptions of the systems or criteria that have replaced readability formulas. The range in what has been identified as grade appropriate is evident in the preceding two examples.

This chapter examines current definitions of text difficulty and how they are expressed in standards and assessments. Research on and designations of text difficulty in standards and assessments are examined with reference to third grade, in particular, because of the focus in national and state contexts on this grade level. This attention to definitions of grade-appropriate text at the third-grade level does not exclude interest in other levels. The emphasis that third-grade attainment has received from policymakers, however, suggests that if grade-appropriate levels have been identified at any grade level, the process should be expressed most clearly with third-grade text.

This examination of the bases for grade-appropriate text begins with a review of empirical and theoretical work on text difficulty. Historical work on readability, as well as its current manifestation in the form of Lexiles, is reviewed. Next, the archival literature of the past decade is reviewed to identify the models of text difficulty that have replaced readability formulas.

The next focus is on the treatment of text difficulty in recent U.S. national and state-level standards documents. In their model of curriculum, instruction, and assessment, Hiebert and Calfee (1992) identified the *curriculum*, or the goals of literacy instruction, as the engine for instruction and assessment. The standards and curriculum frameworks of states and national agencies would be expected to be the source for defining grade-appropriate reading proficiency. In the event that standards documents do not detail the nature of text difficulty, the textbook programs adopted by states provide the next source for definitions of text difficulty.

Textbook programs continue to be a driving force within U.S. reading instruction (Baumann, Hoffman, Duffy-Hester, & Ro, 2000).

The interpretation of text difficulty in assessments also merits examination. Ultimately, some type of assessment will be used to determine whether standards have been achieved. The difficulty of the texts on assessments, then, figures prominently into evaluations of standards and curriculum. Is there a match between the texts identified by federal and state agencies as providing the standards to be met and the texts of assessments? When the reviews of standards and assessments produced few descriptions of text difficulty, the texts of textbook programs that states use to support their students' attainment of standards and the assessments that are used to determine students' attainment of standards were studied. The models of text difficulty that were uncovered in the review of literature and the scheme that has been used for much of the 20th century—readability formulas—were used to describe current manifestations of text difficulty.

Perspectives on Text Difficulty

During most of the 20th century, readability formulas influenced evaluations of text difficulty and the creation of texts. This review begins with readability formulas and the most recent manifestation of this model—Lexiles. Amid calls for authentic text in reading instruction during the late 1980s, data on readability formulas were no longer mandated as part of state or district textbook adoptions. The archival literature of the past decade was the basis for a review of literature on alternatives to readability formulas as the basis for establishing grade appropriateness of texts.

Readability Formulas

Since their inception in the 1920s (Lively & Pressey, 1923), readability formulas have established text difficulty on the basis of syntactic and semantic complexity. Semantic complexity is measured by either word familiarity as compared with a particular list of words or by word difficulty as measured by the number of syllables per word. The number of words per sentence determines syntactic complexity. From the 1920s through the 1980s, readability formulas were the guide for the creation of texts, not simply the evaluation of texts (Green & Davison, 1988). School texts, whatever the content area, were required to comply with semantic and syntactic parameters of readability formulas.

During this period, text readability was also a central topic of research, as evidenced by the first volume of the *Handbook of Reading Research* (Pearson, Barr, Kamil, & Mosenthal, 1984). Klare's (1984) chapter on readability was one of the longest in that handbook, accounting for 7% of the volume. Klare predicted that readability would continue to be a central area of research and practice. However, a study of the subsequent two volumes of the *Handbook of Reading Research* (Barr, Kamil, Mosenthal, & Pearson, 1991; Kamil, Mosenthal, Barr, & Pearson, 2000) produced only one reference to readability. This reference occurred in the second volume, in which the discussion of readability accounted for three pages or 0.3% of the total volume. In the third volume, readability was not even listed in the index.

Although this research was not summarized in either the second or third volume of the *Handbook of Reading Research*, a line of research that paralleled Klare's (1984) comprehensive review was identifying problems with readability formulas. In the 1980s, researchers discovered that roadblocks to comprehension were inadvertently created by strict compliance to readability formulas (Bruce, 1984; Green & Davison, 1988). By substituting high-frequency words for more infrequent and often more descriptive words, meanings were changed or made obscure. In making sentences shorter, conjunctions were eliminated, often obscuring the causal connections that had helped make the ideas comprehensible (Green & Davison, 1988). Others argued that bland or missing descriptive language created "primerese" (Amsterdam, Ammon, & Simons, 1990), which could be unfamiliar and even nonsensical for beginning readers.

Others compared students' comprehension of well-structured and poorly structured texts (Beck, McKeown, Omanson, & Pople, 1984; Brennan, Bridge, & Winograd, 1986). Students' superior performances on the well-structured texts were taken as evidence that readability formulas were detrimental to effective comprehension. In none of these studies of restructured texts, however, was the focus on children at the very beginning stages of reading. The nature of scaffolds for beginning readers had not been addressed when these critiques of school texts, including the role of readability formulas in creating or manipulating these texts, were communicated to practitioners through *Becoming a Nation of Readers: The Report of the Commission on Reading* (Anderson et al., 1985). The message that readability formulas can make text more difficult for readers struck a chord with teachers. In 1987, California's

Framework for English/Language Arts (California English/Language Arts Committee, 1987) stated that texts needed to consist of authentic literature to be on the state-approved list for purchase by California school districts. Texts that had been manipulated to comply with readability formulas could not be purchased with state-allocated textbook funds. Several years later, the Texas Education Agency (1990) followed suit. An analysis of the textbook series that were adopted in Texas in 1993 confirmed that contrived text had been replaced with literature (Hoffman et al., 1994).

Since the Hoffman et al. (1994) analysis, Texas and California have issued new guidelines for their 2000 (Texas Education Agency, 1997) and 2002 (California English/Language Arts Committee, 1999) textbook adoptions. Both states have called for texts at the beginning stages to have high percentages of decodable words; this is a guideline that has been followed in the beginning textbooks adopted for use in Texas (Hiebert, 2000a). However, the pace at which words with different letter-sound relationships are introduced and the repetition of these words presumably influence the difficulty of a text for beginning readers. Neither the Texas nor the California guidelines addressed this issue. For example, Hiebert (2000a) found that 40% of the unique words appeared only once in the first 10 texts of four of the largest reading-language arts textbook programs.

Such features in text for beginning readers have redirected educators' attention to readability formulas. The developers of the Lexile system, which is currently the most popular readability formula, claim that it is not a readability formula (Smith, Stenner, Horabin, & Smith, 1989). Lexiles, however, are derived from the same two measures that are used to compute readability formulas: semantic difficulty, as measured by the presence of the texts' words on a word list, and syntactic difficulty, as measured by sentence length. According to *The Lexile Framework for Reading* (MetaMetrics, 2000), there are six ranges of Lexiles that cover the elementary grades: First Grade: 200–370; Second Grade: 340–500; Third Grade: 480–670; Fourth Grade: 620–820; Fifth Grade: 770–910; and Sixth Grade: 870–1000. The scale claims to measure texts through college level with Lexiles through 1600.

To demonstrate the data provided by Lexile analyses, consider the Harry Potter offering *Harry Potter and the Goblet of Fire* (Rowling, 2000). This book is given a Lexile of 880. Another popular children's book, *Charlotte's Web* (White, 1952), has a Lexile of 680, which is the same

Lexile rating as John Grisham's (1990) *The Firm.* This comparison illustrates the ambiguity of data presented in a scale from 200 through 1600, which has been disassociated from its semantic and syntactic criteria. For third-grade level, for example, the range of 480 to 670 provides little indication of the corpus of words students need to recognize automatically. The developers describe sentence length and the presence of words from a list of words according to frequency of appearance in written English (Carroll, Davies, & Richman, 1971) as the basis for establishing Lexiles. Neither the framework nor the individual Lexile given for a text provides even a hint of precisely which corpus of high-frequency words relate to which level.

Although legitimate criticisms can be leveled against readability formulas, including Lexiles, the disjuncture between the work of researchers and the needs of school-based educators in securing appropriate texts for students is apparent in the Lexile system's popularity. Six states have adopted the Lexile framework as a means for selecting textbooks (MetaMetrics, 2000). One of these, North Carolina, has linked end-of-grade tests to Lexiles and has mandated the use of Lexiles in textbooks that are purchased with state funds (North Carolina Public Schools, 2000). The Reading Excellence Act also identifies Lexiles as one means of assessing performance. Harcourt, a publisher of an elementary textbook and test program, promises its customers that its material complies with the Lexile framework. Another publisher, Scholastic, also lists Lexiles on covers of its books for the educational market.

Recent Perspectives on Text Difficulty

An extensive review of literature was conducted to determine the methods of establishing text difficulty that have replaced readability formulas in research and practice. The review began with the issues from 1991–2000 (the period since the last publication of this volume) of six archival journals: *Reading Research Quarterly, Journal of Literacy Research, Journal of Educational Psychology, American Educational Research Journal, Journal of Educational Measurement,* and *Scientific Study of Reading.* Chapters on text and policy also were analyzed from the most recent *Handbook of Reading Research* (Kamil et al., 2000). When this search produced only one scheme that had been used in a research study, the review was extended to include books and journals aimed at practitioners as well as journals oriented toward special education. This process produced three additional systems for analyzing texts; summaries of all four follow.

Engagingness, predictability, and decodability. Hoffman and his colleagues (1994) wanted to capture in as many ways as possible the differences between the first-grade texts of textbook programs published in 1986 and 1987 and 1993. With this in mind, they analyzed texts on a variety of measures, particularly focusing on three measures that they developed: engagingness, predictability, and decodability. Hoffman et al. reported that the 1993 texts were more engaging than the 1986 and 1987 texts when raters considered the content of texts, the sophistication of language in texts, and the design of the texts, as indicated by holistic ratings of 3.2 (on a 5-point scale) for the 1993 texts and 2 on the 1986 and 1987 texts.

Predictability was established through an analysis of nine characteristics that make texts more predictable to children, including repeated patterns, familiar concepts, rhyme, rhythm, and cumulative pattern. The analyses of features as well as a holistic rating showed the early level of the 1993 texts to be substantially more predictable than the same level of the 1986 and 1987 texts. A decodability scale was also applied, with 1 representing a low level of decodability and 5 indicating the presence of common, easily decodable words. The 1986 and 1987 texts were evaluated as more decodable at both the beginning and end of the year than the 1993 texts; the 1986 and 1987 texts were given ratings of 4.5 and 3.9, respectively, whereas the 1993 texts were rated 3.2 and 2.8. These descriptions were not placed within a theoretical construct that describes the role of these variables at different points in children's reading development or appropriate levels of the variables of engagingness, predictability, and decodability for different points in reading acquisition.

Potential for accuracy. Stein, Johnson, and Gutlohn (1999) evaluated the correlation between the elements of words in student materials and the guidance on teaching these words in the teachers' guides at the initial stages of reading. Stein et al. were interested in the potential that children had to accurately decode text as a function of instruction. Potential for accuracy was established in the following manner: If the letter/sound correspondences for initial *m* and *b*, the vowel *a /a/*, and the final *n*, *d*, *t*, and *p* have been introduced in previous lessons, words such as *mad*, *man*, *mat*, *map*, *bad*, and *bat* in a target text meet the criterion of "potential for accuracy" in decoding. Stein et al. reported considerable variation in the 1995 copyrights in the potential for accuracy. The range in potential for accuracy went from the 98% given to Open Court texts to 44% awarded to Scholastic texts.

There are many issues related to decodability in learning to read that Stein and her colleagues do not describe. For example, their "potential for accuracy" measure (1999) assumes that children should be able to apply phonics elements after an instructional lesson even if that lesson has attended to a number of different letter-sound relationships and high-frequency words, as is the case with first-grade reading programs (Hiebert, Menon, Martin, & Huxley, 2000; Stein, Johnson, Boutry, & Bortleson, 2000).

Task analyses of text. The goal of the Text Elements by Task (TExT) work of Hiebert and her colleagues (Hiebert, 1999, 2000a, 2000b; Martin & Hiebert, 2001; Menon & Hiebert, 1999) is to identify variables that influence the difficulty of the task posed by texts. For example, what capabilities would third graders need to read Examples 1 and 2 at the beginning of this chapter automatically, permitting full attention to comprehension? Although many different factors influence readers' interpretations of texts, students need to be able to recognize words automatically to comprehend texts (Adams, 1990; Fuchs, Fuchs, & Maxwell, 1988). The TExT index builds on work by Carroll et al. (1971) and Hayes, Wolfer, and Wolfe (1996) describing the relative frequency of words in texts. Using newspapers as the baseline, Hayes et al. have established the "LEX" scores of texts. Texts with (+) LEX scores are more difficult than newspapers, whereas texts with (-) LEX scores are less difficult than newspapers. The larger the numerical score, the more difficult (or easier) the text. Hayes et al. reported that a 1956 Scott, Foresman preprimer had a LEX of -80.5, whereas children's books for ages 9 through 12 had a LEX of -29.6, and those for preschoolers had a LEX of -37.8. From a corpus of 5 million words from textbooks across subject areas used in grades 3 through 9, Carroll et al. (1971) produced an index similar to the LEX for individual words. Neither index is theoretically grounded in a model of reading acquisition or development. Is a LEX of -80.5 more appropriate than a LEX of -29.6? At what point should a word with a frequency rating of 500 be read?

A model of text difficulty needs to explain how, when, and why the relative frequency of words matters. In beginning to build such a model, Hiebert (2000b) argues that highly decodable words should be treated differently than less decodable words. Even though words such as *guide* and *fence* are more difficult to decode than *win* and *pat*, words in both sets are counted as "difficult" within a readability formula such as the Dale-Chall (Chall & Dale, 1995) or the Spache (Spache, 1981). In the TExT perspective, words with simple vowel patterns such as *win* and *pat* are counted as recognizable vocabulary at an early stage, whereas single-syllable words with complex patterns such as *guide* or *fence* are not.

After studying hundreds of texts and students' reading of these texts, Hiebert (2000b) has proposed the critical word factor (CWF) as an indicator of the task demands for recognizing words in primary-level texts. The CWF indicates the number of words that will be difficult in a text when measured against a curriculum. Extended samples from texts are used to establish the number of unique words per 100. The unique words are further analyzed to establish the number that lie outside the high-frequency curriculum and, among this latter group of words, those with phonic or syllabic patterns that are beyond that level's curriculum.

When the longer texts from which Examples 1 and 2 are drawn are analyzed against a third-grade curriculum (proficiency with the 1,000 most frequent words and all vowel patterns in single-syllable words), the CWF for *Hill of Fire* (Lewis, 1971) is 4 and for *The Night Crossing* (Ackerman, 1994), 14. On average, a hundred-word sample in *The Night Crossing* will have 14 unique words that fall outside the third-grade curriculum: words such as *absolute, silence, whispered, neighborhood, shadows*, and *undisturbed. Hill of Fire* will have an average of 10 fewer unique words per 100 that fall outside the third-grade curriculum.

From the TExT perspective, texts with more rare and multisyllabic words will pose a challenge for students who are not proficient readers.The same text can have a number of different CWFs, depending on the underlying curriculum against which it is assessed. After examining many sources, Hiebert (2000b) could find few curricula for word recognition across the primary grades. In lieu of established curricula, Hiebert identified "assumed" curricula at different grade levels. That is, what core group of words needs to be known to successfully read approximately 90% of a text? The percentage of 90 was chosen because it is typically described as characterizing a minimum for meaningful or instructional reading (Betts, 1946; Clay, 1985). Hiebert (2000b) tested various curricula against 500 texts drawn from textbook programs and assessments for the primary grades. The assumed curriculum of third-grade assessments, Hiebert concluded, was automaticity with the 1,000 most frequent words (Carroll et al., 1971); words related to the 1,000 most frequent words by inflected endings such as *ed*, *ing*, and *s/es*; and the ability to recognize all vowel patterns within single-syllable words. Hiebert (2000b) has reported data indicating that the CWF is distinct from the commonly used readability formulas, that of Fry (1968) and Lexile ratings.

Text leveling. The assignment of texts as benchmarks for particular grade levels by experts in children's literature or in reading processes has precedence in projects such as the National Assessment of Educational Progress (National Assessment Governing Board, 1994), in which committees of experts select texts. Textbook publishers also use experts to select the literature for particular grade-level anthologies. The term *text leveling*, however, refers to a particular process that has been disseminated through Reading Recovery (Peterson, 1991) and its classroom-based extension, guided reading (Fountas & Pinnell, 1999, 2001). The 20 levels of Reading Recovery (Peterson, 1991) and the 26 levels of guided reading (Fountas & Pinnell, 1999, 2001) are differentiated along four dimensions: (1) book and print features; (2) content, themes, and ideas; (3) text structure; and (4) language and literary elements. Table 15.1 presents the nature of the definitions provided in Fountas and Pinnell (1999) for the features of the three levels that are end-of-grade accomplishments for first, second, and third grades. Note that in their extension of the levels to sixth grade (Fountas & Pinnell, 2001), the category of content is separated from theme and ideas, and two aspects of language that were part of language and literary elements in Fountas and Pinnell (1999) now form their own categories: vocabulary and sentence complexity. For sentence complexity, the description cites length, embedded clauses, and punctuation as factors in text difficulty, and vocabulary cites multisyllabic words and choice of words related to content. Anchors are not provided that illustrate the range of difficulty on any of these dimensions.

The scoring to date has been holistic; in other words, a text is assigned a single level. For example, the two texts that were given, respectively, Lexiles of 880 and 680—*Harry Potter and the Goblet of Fire* and *Charlotte's Web*—are given levels of "T" and "Q." Scores are not reported for individual categories (e.g., content, text structure) in sources discussing the ratings, such as Fountas and Pinnell (1999, 2001). Further, no research studies have reported on the relative weight given to different dimensions in these holistic ratings or whether the dominant factors vary for different types of texts. For example, print features would be

Table 15.1. Characteristics of text levels for end-of-year reading

Primary Category	Secondary Category	Level I (Grade 1)	Level L (Grade 2)	Level O (Grade 3)
Book and print features	Length	• From 30–40 pages; layout varies widely, including maps and charts	• From 70–80 pages, with chapters ranging from 5–15 pages	• Between 50–200 pages
	Illustrations	• Enhance meaning, but provide little support for precise word solving and meaning	• Included, but readers are less dependent on them	• Some black and white illustrations in the text
	Punctuation	[No description provided]	• Many conventions of text are introduced, including ellipses, italics, all capitals, indentations, and bold type	• Highly complex sentences with range of punctuation, which is often important to the meaning of text
	Layout & font	• New sentences begin on left margin in some longer texts; others are signaled by clear spaces after a period or other ending punctuation within a line • Font size is smaller with more words per page	• Print size is varied and often small	[No description provided]

(continued)

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Table 15.1. Characteristics of text levels for end-of-year reading *(continued)*

Content, themes, and ideas	• Content is more difficult	• Some stories have abstract or symbolic themes; books require a higher level of conceptual understanding	• Themes are sophisticated and require interpretation and understanding • Readers will experience the same themes through different genres • Previously read texts support interpretation of new texts
Text structure	• Mostly narrative, although shorter, informational books as well • Texts use dialogue, which is indicated by the identification of speakers and sometimes by spaces between speakers • One main plot with a solution; episodes or events are more highly elaborated and have multiple events; characters and story events require interpretation	• More sophisticated plots with characters that are developed throughout the texts and over longer periods of time • Events build on each other, requiring recall and tracking of information • More characters are speaking and dialogue is not always assigned • Readers are required to follow actions of several different characters	• Books have multiple characters who are developed through dialogue and actions, not simply through narrative
Language and literary features	• Complex word solving is required; texts have more multisyllabic words and these are embedded within longer sentences and paragraphs	• Vocabulary support may be required because of content-specific, unfamiliar multisyllabic words	• Vocabulary is sophisticated and varied with many new, multisyllabic words; need to quickly analyze many new words while focusing on meaning

Adapted from Fountas & Pinell (1999).

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expected to weigh in more heavily at the very early levels such as A through E but not at levels V through Z. Text leveling, however, is popular; numerous sets of little books advertise that they have been leveled according to this scheme.

Summary of current text difficulty schemes. Once the national and state standards and the texts of textbook and test programs were reviewed, the lack of measurement of text difficulty became readily apparent. In most instances, descriptions of how text difficulty was perceived or had been established were not explicit in the standards documents or program documentation. Further, there were no data on what characteristics had been considered in designating particular texts as grade appropriate for third grade. Texts were simply presented as appropriate third-grade texts.

Shared constructs were needed to describe the common traits of appropriate third-grade texts. In lieu of analyses by publishers of texts and tests or standards committees, such analyses were conducted for this chapter. Although existing indices of text difficulty may be less than perfect, those that bring appropriate data to bear were used. Although the meaning of readability scores and Lexiles is difficult to ascertain, such constructs are used in the marketplace. Consequently, when texts were proposed as exemplifying particular grade-appropriate levels, readability and Lexile levels were obtained. Because the wordlists used in formulas are outdated (for example, Chall & Dale, 1995; Spache, 1981), a readability formula that relies on assessment of syllables per word for the measure of semantic complexity was used. The readability formula chosen was Fry's (1968) measure, which assesses sentence length and the number of syllables per word.

Of the four systems that were just described, only the text leveling system enjoys application and popularity in the marketplace. Further, it was the only text difficulty system cited in U.S. national and state standards documents, textbook programs, or tests. Because Fountas and Pinnell (1999) advise teachers that they can become experts in text leveling through study of the dimensions in their book, it seemed plausible to form a cadre of evaluators who could level the texts on tests as well as those in textbook programs that do not report these levels. When Table 15.1 was given to a group of experienced teachers (all with master's degrees), there was simply too much ambiguity across the descriptions of an element to obtain interrater agreement for a set of 27 books selected from Fountas and Pinnell's (1999) list of 7,500 leveled books. These 27 texts represented 3 titles for each of the levels from H through P.

Further efforts were devoted to identifying "anchors" or books that typified the characteristics of each of the three target levels, a technique that is frequently used in holistic scoring schemes (Calfee & Hiebert, 1991). The meaning of differences between "difficult content" (Level I), "higher level of conceptual understanding" (Level L), and sophisticated themes that "require interpretation and understanding" (Level O) was difficult to ascertain when comparing a Level O book such as *Class Clown* (Hurwitz, 1987) and a Level I book such as *Eat Up, Gemma* (Hayes, 1988). Nor was it possible to establish commonalities in the conceptual load of a group of books at the same level such as the selected texts for Level L: *The Josefina Story Quilt* (Coerr, 1986), *Cam Jansen and the Mystery of the Television Dog* (Adler, 1981), and *Amelia Bedelia* (Parish, 1963).

The texts that have been proposed by the New Standards as end-of-third-grade, using the Reading Recovery levels, will be reviewed, and the texts of the Developmental Reading Assessment (DRA) (Beaver, 1997), which is used in many Reading Recovery efforts, will be included for analyses with the texts of other assessments later in this chapter. However, without refinement of the leveling criteria, the text levels of Fountas and Pinnell (1999, 2001) and of Peterson (1991) cannot be applied with fidelity.

The systems of Hoffman et al. (1994) and Stein et al. (1999, 2000) describe critical dimensions of beginning reading texts but do not propose how to relate these features to texts at a second- or third-grade level. For example, how predictable should texts be at the beginning of second grade? Research suggests that predictable texts could interfere with students' attention to individual words at particular stages of reading development (Johnston, 2000). The Stein et al. (1999) measure of decodability raises the question of how many phonics elements beginning readers—especially those who may be vulnerable in learning to read—can acquire as a result of a single lesson. The adaptation of the LEX system's word frequency in the TExT method (Martin & Hiebert, 2001) and its augmentation with highly decodable words as well as ratios of unique to total words makes it possible to compare the features of text at third grade with those for second and fourth grade, thus providing a point of reference.

Three indices, then, were used in analyzing texts that are proposed as part of national and state standards and those in published textbook programs and tests: (1) a readability formula (Fry, 1968); (2) Lexile analysis; and (3) the CWF index of the TExT software (Martin & Hiebert, 2001). When the text levels (Fountas & Pinnell, 1999, 2001) were provided, these, too, are reported.

National and State Standards

There are two sources for standards: reports from national committees and organizations, and state frameworks. For this review, three documents from U.S. national organizations were examined, as were three documents from state agencies.

National Standards

As education is an area over which states have jurisdiction in the United States, the number of national committees, agencies, and organizations that have produced standards documents is limited. Even so, all the standards documents that have been produced over the past decade, including the National Assessment of Educational Progress (NAEP) framework (National Assessment Governing Board, 1994) and the *Standards for the English Language Arts* (International Reading Association & National Council of Teachers of English, 1996), were not analyzed. Rather, two national-level documents that have been in the public eye over the past several years were examined: *Preventing Reading Difficulties in Young Children* (Snow, Burns, & Griffin, 1998) and *Teaching Children to Read: An Evidence-Based Assessment of the Scientific Research Literature on Reading and Its Implications for Reading Instruction* (National Reading Panel, 2000). In addition, the standards document from the New Standards Project (New Standards Primary Literacy Committee, 1999) was examined. The intent of the former two documents was to summarize critical research, not to achieve consensus on national standards, and neither was intended as a standards document. However, in their efforts to report on critical current research, these reports provide the best available indicators of perspectives on text difficulty in students' reading development.

The most recent of these documents, *Teaching Children to Read* (National Reading Panel, 2000), was searched with four terms: *text difficulty*; *text leveling*, or *levels*; *readability*; and *Lexiles*. The word *readability* was found twice in the report. The first reference occurs in a description of an intervention, in which teachers estimated readability levels of text; the second reference is in a description of a research study in which the readability level and the number of total words in texts were reported (Pressley et al., 1992). Although a conference paper by the developers of Lexiles is referenced (Smith et al., 1989), the term *Lexile* does not appear in the body of the National Reading Panel (NRP) report.

The NRP's emphasis on replicable outcomes means that a preponderance of the conclusions about student reading accomplishments was based on norm-referenced tests. Despite an emphasis on evidence, there was no discussion of the contents of these tests or of the texts that were used in treatments. Students' performances on a special study of the NAEP (Pinnell et al., 1995) were summarized as "45% dysfluent" on "grade-level stories that the students had read under supportive testing conditions" (National Reading Panel, 2000, pp. 3–5). There is no information, however, about what constitutes grade-level texts or whose definition of grade level the NAEP stories represented.

In the report that preceded the NRP report *Preventing Reading Difficulties in Young Children*, Snow et al. (1998) described the need for third graders to have the skills, habits, and learning strategies required for fourth-grade success. However, descriptions of the content of these skills and learning strategies are limited. On a table listing grade-level accomplishments, the only reference to the characteristics of texts that exiting third graders should be able to read is the following: "Reads aloud with fluency and comprehension any text that is appropriately designed for grade level" (Snow et al., 1998, Table 2–2, p. 83).

Although *Preventing Reading Difficulties in Young Children* is more explicit about the need for attainment of a particular text level than *Teaching Children to Read*, neither document sheds any light on the demands of texts. Does automaticity need to extend beyond the 200 to 300 most frequent words that one of the mainstream textbook publishers cites as the standard for proficient third-grade reading in its program (Afflerbach et al., 2000)? What types of metaphors do exiting third graders need to be able to figure out? The flurry of activity on U.S. national reports provides no insight into what skills and strategies are needed to be successful with grade-level texts.

The primary-grade standards document produced by a committee of U.S. experts for the New Standards Project (New Standards Primary Literacy Committee, 1999) was also examined. This document involved participation from scholars representing a range of perspectives. Unlike the authors of the other two national documents, the New Standards Committee was explicit in identifying the levels of appropriate reading for different grade levels. For each of the primary grades from K–3, these standards describe text levels and give lists of book titles that exemplify the kinds of books students are expected to read. For the end of third grade, ability to read Level O texts is cited as the benchmark. Although Fountas and Pinnell (1999) are not cited directly, the New Standards levels correspond to their scheme. Ten titles are given as examples of Level O texts that students should be able to read at the end of grade 3. Two of these 10 titles were not accessible through major booksellers. The remaining eight titles are listed in Table 15.2. Also included in Table 15.2 are data on text difficulty according to the three indices of conventional readability (Fry, 1968), Lexiles, and the CWF component of the TExT software (Martin & Hiebert, 2001).

The texts identified as Level O according to Reading Recovery vary considerably in their ratings on other text difficulty schemes. On the Fry readability formula, the ratings range from the end of first grade through the middle of sixth grade. According to the Lexile framework, the texts have a similar range: from mid-second grade through sixth grade. The CWFs for the texts vary from 7 to 14 critical words per 100. On all these indices, the variation in text difficulty is considerable for books that are reported to be on a similar level. The New Standards project gives teachers and children little concrete information regarding what is appropriate third-grade text. Unlike the two national reports, however, the New Standards project does recognize that text difficulty is a factor in describing goals for students' reading.

State Standards

Following the Goals 2000: Educate America Act (U.S. Department of Education, 1998), which supports states in formulating their standards, standards and framework documents in language arts/reading have proliferated. This analysis considered the standards documents of the three states that (a) rank in the top four states with regard to population and (b) identify textbooks as a state. These three states—California, Texas, and Florida—provide guidelines that textbook publishers need to meet for school districts to purchase their programs with state funds. With 25% of the U.S. population residing in California, Texas, and Florida (U.S. Census Bureau, 2000), these three states' guidelines influence the opportunities for children in smaller states and in states where individual school districts or schools choose textbooks.

California's state standards documents are the only ones that cite texts exemplifying the content standards. The California standards

Table 15.2. Difficulty ratings of four sets of exemplar texts: readability, lexiles, and critical word factor

New Standards				California				Textbook I				Textbook II			
	Read	Lexile	CWF		Read	Lexile	CWF		Read	Lexile	CWF		Read	Lexile	CWF
Mieko and the Fifth Treasure	4.1	680	13	*Nana Upstairs & Nana Downstairs*	3.5	640	5	*Water Woman*	2.8	430	9	*How I Spent My Summer Vacation*	2	450	6
The Patchwork Quilt	3.1	520	10	*Chair for My Mother*	2.3	640	8	*Turtle Bay*	2	430	6	*Goldilocks*	2.9	480	8
The Night Crossing	6.5	960	14	*The Sleeping Beauty*	6.8	1090	12	*Balto, the Dog Who Saved Nome*	3	490	8	*Fly Traps*	4.1	740	7
Class Clown	3.3	670	7	*Courage of Sarah Noble*	3.3	580	5	*The Talent Show*	2.3	560	10	*Tornado Alert*	4.2	640	9
Ramona Quimby, age 8	5.5	860	13	*The Ox-Cart Man*	6.5	1220	12	*Centerfield Ballhawk*	2.3	490	11	*Night of Pufflings*	5	890	8
Henry and Beezus	6.4	730	10	*Hill of Fire*	1.5	350	4	*Coyote Places the Stars*	5.3	770	9	*Flight*	3.2	460	7
Beezus and Ramona	5.3	780	8	*Fables*	2.5	540	7	*A Bookworm Who Hatched*	5.9	800	13	*More Than Anything Else*	2.5	620	7
The Boxcar Children	1.8	440	5	*Winnie the Pooh*	5.5	760	5	*Leah's Pony*	2	560	10	*Brave Irene*	3.5	570	11
				A Weed Is a Flower	3.4	610	9	*Cocoa Ice*	6.3	1010	10	*Mailing May*	4.6	710	10
				Story of Johnny Appleseed	3.6	710	6	*If You Made a Million*	9.3	810	7	*Floating Home*	3.8	530	10
Mean	4.5	705	10	Mean	3.9	714	7	Mean	4.1	635	9	Mean	3.6	609	8

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(California English/Language Arts Committee, 1999) refer to the *Recommended Readings in Literature (Kindergarten Through Grade Eight)* (California Department of Education's Language Arts and Foreign Languages Unit, 1996) for text recommendations. Titles that were identified as appropriate for third grade were obtained from the six categories of literature presented in the document. For three categories, only a single third-grade title was in print; for one category, none of the books were in print. When there were several titles that were in print for a category, two titles were chosen randomly. Ten titles were analyzed in all. The difficulty ratings of these 10 titles according to the three indices are provided in Table 15.2.

The standards documents from Florida and Texas contain many descriptions of what third graders should be able to do. In Florida, the two standards that are devoted exclusively to reading attend to the effective use of the reading process and to the construction of meaning from a wide range of texts. The only mention made of word recognition in the Florida standards is one of the descriptors of Reading Standard 1: Uses the Reading Process Effectively. One of the ways a student shows evidence of attainment of this standard is "selects from a variety of simple strategies, including the use of phonics, word structure, context clues, self-questioning, confirming simple predictions, retelling, and using visual cues, to identify words and construct meaning from various texts, illustrations, graphics, and charts" (Sunshine Standard, Language Arts, Grade 3) (Florida Department of Education, 1999, p. A-20). Other points under this standard, the other reading standard, and the two literature standards refer to ways in which students will perform with texts, such as identifying personal preferences, identifying authors' purposes, and so on. No mention is made of the level of text with which students should be able to perform these processes.

In both Florida and Texas, the task of designating text levels falls to the textbook publishers and test developers. Because Florida will adopt new textbooks in 2002 and Texas has just completed an adoption of new textbooks, Texas's current textbook offerings have been analyzed for text difficulty. Passages from two of the four mainstream programs that received a majority of Texas's business were analyzed: those from Harcourt's Collections (Textbook Program I) (Farr et al., 2001) and Scott Foresman's Reading (Textbook Program II) (Afflerbach et al., 2000). Ten passages from each program were analyzed, five representing the beginning of the third-grade texts and five representing the end of the third-grade texts.

An equivalent number of words was analyzed for each passage. Summaries of these analyses are included in Table 15.2.

On all three measures of text difficulty, the range across the texts from the *Recommended Readings in Literature* (California Department of Education's Language Arts and Foreign Languages Unit, 1996) and Textbook Program I is considerable. The range in readability level is 5 and 7 grade levels for the California texts and the texts of Text Program I, respectively. On Lexiles, the texts range from second grade—*Hill of Fire* (Lewis, 1971)—to sixth grade and beyond—*The Ox-Cart Man* (Hall, 1979), *The Sleeping Beauty* (Hyman, 1977), and *Cocoa Ice* (Applebaum, 1997). Similarly, the CWF for these two programs show considerable variation. The range from the easiest to the most difficult text, as measured by CWF, is 7.

On all three measures of text difficulty, Textbook Program II showed the most consistency. Even for this program, however, the differences between texts were considerable. The range for grade levels, according to the Fry readability formula, is 3; the range on the Lexiles is 410, equivalent to almost two and a half grade levels; and the range for the CWFs is 4.

While the difficulty indexes for Textbook Program II show the most consistency of these three schemes, this pattern needs to be viewed in relation to the instructional progression that is promised by a textbook program. When programs such as Textbook Programs I and II advertise one volume as "3.1" and the other as "3.2," some order in difficulty is implied. On the lexile, readability, and CWF measures, the texts representing the beginning of third grade and those representing the end of third grade are remarkably similar for Textbook Program II. The texts at the beginning and end of Textbook Program I show more variability on the lexile index and the readability formulas, with the texts of the second half of Textbook Program I, on average, harder than those of the first half of that program. On the CWF measure, however, the beginning and final texts of Textbook Program I have similar numbers of hard words per 100 running words: a CWF of 9 for the set of first texts and a CWF of 10 for the set of final texts. The instructional progression of these two textbook programs is not apparent, at least when viewed from text difficulty.

What conclusions about text difficulty can be derived from these analyses? In general, the texts proposed for third grade, including those intended for the first period of instruction, are difficult. The New Standards' and the California exemplars' average Lexiles are both within the fourth-grade range, and those for the two textbook programs are in the upper ranges of third grade. Two of the average figures for the readability formulas also fall into the fourth-grade range. The average CWF is the lowest for the California texts, where 50% have figures that would be expected from instructional materials—4 to 6. In the case of the other three sets presented in Table 15.2, the average CWFs of 8, 9, and 10 suggest that third graders are expected to be adept at reading multisyllabic words that are not highly frequent. Whereas the need to attend carefully to 4 to 6 words per 100 is within an instructional range, the need to attend to 8 to 10 words per 100 is approaching what has frequently been regarded as frustration level for third graders.

Text Difficulty and Assessment

Because U.S. national and state standards generally fail to address the grade appropriateness of text, the text levels on the tests that are given to establish whether students have attained standards are critical in shaping perceptions of whether students can read grade-appropriate texts. Large states such as Florida and Texas have tests specially designed by the large test publishers. The documentation that accompanies these tests, however, does not contain any information on the manner in which particular texts were assigned to particular test levels. To understand the difficulty of current assessments, it was necessary to conduct an analysis similar to the analysis of exemplars offered as part of standards documents and of texts presented in instructional programs. The results of such an analysis, it was determined, would be of particular interest relative to the patterns obtained from the analyses of the texts from standards documents and instructional programs.

The texts of six tests were analyzed. These six tests represented three types of assessments. The first type consisted of widely used, norm-referenced, silent reading tests. One of the two tests included in this group was the Stanford Achievement Test, 9th Edition (SAT-9). Currently, student scores on this test provide the sole basis for the State Testing and Reporting (STAR) program in California. In 2000, the state of Florida also mandated that the SAT-9 be administered to all students in grades 3–10. A second norm-referenced, silent reading test, the Comprehensive Test of Basic Skills (CTBS), was the second entry in this category. Although none of the three large states whose policy activities are influential in reading education use this test, the CTBS is among the top handful of frequently used, norm-referenced tests.

The second group of tests consists of those that have been devised for Florida and Texas. The Florida Comprehensive Assessment Test (F-CAT) consists of both multiple-choice and essay tasks. Students read two different passages of 1,000 or more words on two consecutive days. The Texas Assessment of Academic Skills (TAAS) is similar in design to the SAT-9 and CTBS. The comprehension section consists of a series of relatively short passages (275 words on average), each followed by a group of multiple-choice questions. Like the F-CAT, however, the TAAS is criterion referenced. Each state sets a standard that students need to reach to have met state expectations.

The third category of assessments consisted of oral reading assessments. The use of informal reading inventories has a long history (Gray, 1920). This group of assessments is particularly interesting because informal reading inventories continue to present texts according to grade levels. Because of its popularity in the marketplace as well as the existence of a recent revision, the Qualitative Reading Inventory (QRI) (Leslie & Caldwell, 2001) was chosen as one of the two assessments in this category. The second was the DRA (Beaver, 1997). This assessment is advertised as exemplifying the leveled system of Reading Recovery. This assessment has enjoyed widespread use among Reading Recovery and guided reading users.

In all cases, the texts in the analysis came from the forms or versions of tests intended for third grade. A similar number of samples and of words per sample was analyzed for each assessment. Table 15.3 gives the characteristics of the six assessments on the three measures of text difficulty (CWF, Fry readability, and Lexile).

Within each of the three indices, the ratings for the six assessments are quite consistent. When compared to the data on texts summarized in Table 15.2, the consistency is substantial. Further, most of the ratings for the assessments are within a third-grade band, as identified by the developers of the three text-difficulty measures. The F-CAT could present more of a challenge than the other assessments, at least in its demands for recognition of complex words. Even a CWF of 7 however, is reasonable when compared with the demands of the exemplars from the New Standards list in which 10 was the average CWF.

One aspect of the norm-referenced tests and the two state tests that is significant for third graders is the role of reading speed. Speed of reading can be captured on the QRI and DRA, although the procedures for both of these instruments do not emphasize gathering this data to the same

Table 15.3. Characteristics of assessments

		Critical Word Factor	Fry Readability	Lexile
Norm-referenced tests				
	CTBS	3	2.6	450
	SAT	4	2.8	630
State tests				
	F-CAT	7	2.0	550
	TAAS	5	2.5	560
Oral reading assessments				
	QRI	4	2.6	575
	DRA	6	3.5	650

Assessments are based on third-grade curriculum of fluency with 1,000 most frequent words and single-syllable words. CTBS = Comprehensive Test of Basic Skills; DRA = Developmental Reading Assessment; F-CAT = Florida Comprehensive Assessment Test; QRI = Qualitative Reading Inventory; SAT = Stanford Achievement Test; TAAS = Texas Assessment of Academic Skills.

degree as word accuracy information. Ample evidence exists to indicate that the factor of speed with which students recognize words figures heavily into students' comprehension (Pinnell et al., 1995). On the special study of the 1994 NAEP, Pinnell et al. (1995) found that the below-basic readers on the NAEP (approximately 40%) did not differ significantly from above-basic and basic-level readers in accurately recognizing words. However, the rate at which below-basic readers read a text was significantly slower than that of the other two groups. This rate of oral reading was highly related to students' comprehension on a silent reading of the same text.

For the F-CAT, in particular, rate of reading is likely a factor. This test has the most words that fall outside the third-grade curriculum (at least when measured by the 1,000 most frequent words and vowel patterns in single-syllable words). Further, to answer a handful of questions, students need to be able to sustain a theme and supporting details over an eight-page text.

Next Steps

This chapter aimed to describe the definitions of text difficulty in standards and framework documents and the treatment of text difficulty in assessments. In both U.S. national and state policies, the goal of "proficient reading of grade-appropriate text" is cited frequently. Despite this rhetoric by politicians about the need for proficient reading of grade-appropriate text at third grade, the research literature and the standards espoused by national agencies and states are vague about what constitutes such text and the proficiencies required to read it. The summaries of research from two prestigious panels of scholars in recent years provide no insight into what makes one text appropriate for a particular grade and another text appropriate for a subsequent grade. State frameworks do not make explicit the nature of texts with which students at different levels need to be proficient. When exemplar texts are identified by a national center (New Standards Primary Literacy Committee, 1999) and a state frameworks document (California English/Language Arts Committee, 1999), there is substantial variability across them. Neither of these two efforts specify the critical competencies that are required to be successful with these texts.

With state standards silent regarding how text difficulty figures into the goals for children's reading, publishers of tests and textbooks have been placed in the position of determining what is appropriate grade-level text. However, publishers' interpretations of appropriate third-grade reading levels vary. Among the publishers of textbooks and committees that designate standards, the interpretation appears to be that students should be able to read a particular body of literature, whatever the difficulties it poses for word recognition. With one exception, standards committees do not identify the dimensions on which these titles have been chosen. The exception to this pattern is the identification of books according to genre in the California's *Recommended Readings in Literature* (California Department of Education's Language Arts and Foreign Languages Unit, 1996). Even in the choices of titles for different genres in California, answers to a host of questions are not evident: Do the titles deal with different treatments of critical themes that should be understood at this developmental level? Are there particular figurative language devices that are evident in these books and with which third graders should be facile? Are these simply "popular" books among teachers or children's literature experts? Textbook publishers are somewhat more explicit in placing particular books within themes. However, even these themes are often sufficiently general that a variety of books could fit the bill.

When criteria that describe the word recognition demands of texts are applied to these books, there is little consistency either within a set of books or across the different sets. For the Fry and Lexile ratings, almost 50% of the texts fell into the instructional range for third grade. Another 30% fell solidly into the range for sixth grade and higher (5.0 and beyond), and the remaining 20% was in the fourth- and fifth-grade range. This range in difficulty is considerable. Depending on the text that a school district might choose from the list provided by either the New Standards (New Standards Primary Literacy Committee, 1999) or California's *Recommended Readings in Literature*, children's representation as readers could be quite different.

Although publishers of textbook programs and standards committees provide a varied picture of text difficulty, test publishers' interpretations of appropriate third-grade text have been more consistent. The characteristics of tests are similar on all three measures of text difficulty. The texts of the state tests tend to be somewhat more difficult in their word recognition demands than the norm-referenced tests. Further, the leveled texts of the DRA are also at the higher end of the distribution in terms of word recognition demands. As a group, however, the variation is considerably less between the tests than it is between the benchmark and instructional texts. On the Lexile measure, all the tests except the DRA fall at the lower end of the third-grade range, and all but the DRA fall into the third-grade range according to the Fry readability formula. The CWF data indicate that the use of infrequent or multisyllabic words is moderate—an average of 5 rather than the 9 of the texts offered by standards committees and textbook programs.

To illustrate the differences between the tasks of the tests and the textbooks, a portion of a passage from the TAAS is excerpted below in Version 1. It has a CWF of 5, the average across the six assessments reviewed in this chapter. In Version 2, the TAAS passage has been modified to achieve a CWF of 9, the average for the exemplar texts of the New Standards and California Standards as well as the two textbook programs created for Texas.

Version 1: Buddy, the first guide dog in the United States

Buddy stopped before she crossed the street. She looked in all directions. There was a lot of traffic. Cars and trucks zoomed by, but Buddy knew what she was doing. She walked carefully across the street. The people on the other side cheered. They could not believe what they had just seen. A dog had led a man across a busy street. It was an amazing sight.

> The man Buddy had led across the street was blind. The dog, Buddy, was the first guide dog in the United States.
>
> **Version 2: Buddy, the first guide dog in the United States**
>
> Buddy halted at the intersection. She searched the street in both directions. Cars and trucks zoomed by, but Buddy moved and acted with confidence. She waited for a gap in the traffic and then walked carefully across the street. The audience on the other side cheered. They were astounded by what they had just seen. A dog had guided a man across a busy street. It was an amazing sight. The man, Morris Frank, was completely blind. The dog, Buddy, was the first guide dog in the United States.

The number of words and ideas in the two versions are the same. Where the two passages differ is in the presence of infrequent words, particularly multisyllabic words. If students were to stumble on the challenging words in Version 1 on an informal reading inventory, they would be judged to be at their instructional levels according to typical criteria (Betts, 1946). Stumbling on the challenging words in Version 2 would place students at a frustration level (Betts, 1946).

The third-grade texts of instruction are closer to the standard for text difficulty for the fourth-grade assessment of the NAEP—at least the standard of passages that have been released (see, for example, Pinnell et al., 1995)—than the standard for text difficulty in the third-grade assessments. One hypothesis is that the current design of textbook programs is intentional: Students should be taught with and practice on texts that are more difficult than the tests of assessments (Stahl, 2000). Previous work, however, indicates that students are most successful when they have frequent occasions to read texts on which they do not make substantial numbers of errors (Fisher et al., 1978). This work needs to be revisited and follow-up studies need to be conducted.

To provide guidance to policymakers, teachers, and ultimately, the students who are not gaining the necessary reading levels, researchers need to describe the nature of literacy tasks of the digital age and the proficiencies that are required to be successful with these tasks. A critical part of this description involves features of texts that challenge readers. In this chapter, various methods of describing text difficulty were reviewed. One—the CWF—is in its early stages of development. A second—text leveling—provides insufficient information to guide a group of experts in leveling texts. The third method of conventional readability formulas and a recent manifestation of this method—Lexiles—fails to inform teachers and students about the critical processes that readers are lacking. Advice to a teacher to pick texts for particular students that have shorter sentences will hardly do the job.

Other methods of selecting texts have been suggested, such as using a standard of engagingness or quality of literature (Alvermann & Guthrie, 1993). Proof that children can read texts because they are engaging or profound needs to be obtained. A substantial amount of research needs to be directed to the issue of how different types of text influence the task for readers. Such models will eventually be complex and will include the medium of the text (e.g., electronic or printed form [Leu & Kinzer, 2000]). To ignore the features of texts and to assume that the quality of literature is all that matters, however, is an inadequate response. Too many children are struggling with the tasks that are essential for full participation in the digital age to ignore the role that texts play in the development of high levels of literacy.

Questions for Discussion

1. School and State Assessments: Examine the assessments that are used for ongoing and year-end purposes in your school, particularly the manuals that accompany the assessments. What information do the test publishers provide on how "grade-level" text was established? Is the description of what constitutes grade-level expectations sufficient to design an instructional or tutoring program for students who are not meeting these expectations? If the information provided in accompanying manuals lacks specificity, visit the websites of the test publisher and, if the assessment is administered across your entire state, that of your state's department of education. Are descriptions of what distinguishes appropriate text for particular grades evident?

2. Assessments as Part of National Initiatives: Educational initiatives at the national level in the United States have tied funding with accountability and assessment. Since 1965, legislation of the U.S. Congress has also mandated periodic National Assessments of Educational Progress (NAEP) in reading. These results are reported widely as evidence of U.S. students' accomplishments as readers. NAEP results are now presented by state. In visiting the websites of the NAEP (http://nces.ed.gov/nationsreportcard) and U.S.

Department of Education (http://www.ed.gov), look for descriptions of how the texts on the NAEP were chosen. What evidence is provided on how text difficulty has been established on the NAEP or on other federally recommended assessments?

3. Standards: During the 1990s, funds were available for U.S. states to develop standards for literacy and language. The thesis of this chapter is that text difficulty is inadequately specified in standards documents and frameworks of language and literacy. In the years after this volume is published, changes could occur in the treatment of text difficulty by states and federal agencies. Visit the website of the department of education for the state in which you live or, for international readers, the agency responsible for education in your area. How is text difficulty treated in descriptions of standards? Are examples given of texts that exemplify particular grade levels? Are the criteria for designating particular texts as grade-appropriate provided?

   For further examination of standards, consider the *Standards for the English Language Arts*, developed jointly by the International Reading Association and the National Council of Teachers of English. How has text difficulty been dealt with in these standards?

4. The Difficulty of Instructional Texts: Unlike standards in which instructional texts may be discussed but are not in evidence, textbook programs are full of texts. Even when a publisher is not concerned with text difficulty, a text will range in its difficulty for readers of varying proficiencies. Your school may use one or more different reading programs such as leveled books, teacher-and student-selected literature, or a published textbook program. What does material from developers of your school reading program describe as the basis for designating particular texts for particular grades or periods within a grade? How supportive is the information on text difficulty in creating a curriculum for you to work with challenged students in developing proficiencies so that they can read these texts? In cases in which the information is insufficient, what additional information about text difficulty criteria would be useful from program developers for you to support challenged students in reading texts that have been designated as grade appropriate?

5. Criteria for Text Difficulty: This chapter suggests that criteria related to text features need to be considered as well as vocabulary and word recognition demands. Examine existing schemes in your state and district to see how other text features are evaluated. How do these criteria relate to those that are described in this chapter? Interviewing colleagues and students also can be useful to identify features that influence the difficulty of texts. One procedure for identifying critical text features is to select a sample of texts for the grade you teach with texts for different points in the school year represented. Ask colleagues and students to describe the features of these texts that make them easy or difficult to read. How can the features that are commonly identified be developed into a curriculum that supports students in reading texts where these features become increasingly more complex?

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Chapter 16

Preparing Students for High-Stakes Test Taking in Reading

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In the past decade, tests in reading have become a high priority for teachers, administrators, and students. Attempting to improve student achievement, schools and districts have placed an emphasis on accountability. Schools and teachers are expected to show that their students are achieving well on tests in reading, math, and content areas. In this environment of school improvement through accountability, testing is a "high stakes" part of teaching and schooling. In this chapter, I discuss how teachers can prepare students to take high-stakes tests in reading. First, I address the issue of what are high-stakes tests. Second, I describe reactions of teachers, administrators, and students to high-stakes testing. Third, I present recommendations for preparing students for high-stakes test taking. Fourth, I discuss hazards in test preparation. Finally, I propose a framework for test preparation planning. Although there are few answers that apply absolutely to everyone, a considerable amount of experience and research sheds light on all these issues.

Characteristics of High-Stakes Tests

A test or testing program is called high stakes when it is used to make important decisions about individual students, teachers, or schools. A recent report by the National Academy of Sciences titled *High Stakes: Testing for Tracking, Promotion, and Graduation* (Heubert & Hauser, 1999) reviews many of these decisions. One prominent decision is promotion and retention of students. When a test is used to decide whether a student has "passed" fourth grade and should move into fifth grade, the decision has many consequences for the learner. The test on which that decision is made is high stakes, because the child's future is affected, the parents are likely to be involved, and teachers will be influenced by it. Across the United States, retention in a grade is a frequent practice. In the 1990s, for children age 6 to 8 years, approximately 18% of the population were re-

330

tained. For the population age 9 to 12 years, approximately 24% were retained at some point in their school career, and for the population age 15 to 17 years, approximately 30% were retained at least once during their schooling. Whether retention improves achievement cannot be discussed at length here. However, one basis for retention is a high-stakes test, which may be used along with teacher's grades and judgments. Related to retention is graduation from high school. More states are making the granting of high school diplomas contingent on successful test performance. A report from the Board on Testing and Assessment (Feuer, Holland, Green, Bertenthal, & Hemphill, 1999) reviews this practice across all states. In the review, 18% of the states had a high school exit exam, which is a high-stakes event for students and teachers.

The most prominent use of high-stakes tests is improvement of instruction. In 1998, 43% of states in the United States reported using assessment to improve instruction. The tests in these assessment programs may be standardized tests or performance assessments. However, in every case, they are high-stakes events. In some instances, schools scoring low on a high-stakes test are subject to "takeover" by the state department of education. That is, state department staff must approve their curriculum instruction and staffing. The school loses its freedom and flexibility in decision making. When school improvement is the aim of high-stakes testing, publicity often surrounds tests. The press reports test scores in the newspaper that bring high visibility to more successful and less successful schools.

In addition to school improvement, tests may be used for tracking in high school. Students are assigned to academic or general tracks based on a testing event. This event has lifelong consequences, as students rarely shift tracks during their high school experience. In elementary schools, students may be assigned to special resources or special education based on test scores. Such a score is a high-stakes piece of information, because it determines the child's educational experience dramatically.

Tests used for high-stakes purposes vary widely. In some cases, traditional standardized tests are used. Frequently, tests such as the Iowa Test of Basic Skills or comprehensive achievement tests (e.g., Comprehensive Test of Basic Skills [CTBS]) are employed. Often these include a high proportion of multiple-choice items. Traditional items, such as small passages with brief questions and four alternatives, are used. Subtests in the intermediate grades often include vocabulary, word attack skills, and comprehension. Primary grades subtests often assess word recognition, vocabulary, comprehension, and occasionally listening skills. Administrators favor these tests because they are easily administered and can be scored by a machine. This reduces costs and usually increases frequency of test taking. Multiple-choice reading tests have the advantage of high reliability. They are consistent and student performance from one form to the next does not change much. However, many educators question the validity of multiple-choice tests. We rarely confront multiple-choice items in the real world and thus reading experts increasingly prefer the use of "naturalistic" items.

Performance assessments are more popular with reading experts. These assessments include longer passages with full stories, open-ended questions, and constructed responses. Students write their reactions to text and the responses are scored according to a rubric from low to high. Many reading experts consider portfolio assessments even more valid. In this approach, the teacher in the classroom maintains student portfolios. They are coded for reading, writing, and ownership of literacy (Purves, 1993). However, performance assessments and portfolios are less popular with administrators because they are time consuming and expensive. The gain in validity is offset by a high administrative burden. Nevertheless, all three types of assessment approaches in reading are used for high-stakes purposes.

Reactions of Teachers, Administrators, and Students to High-Stakes Testing

Teachers have many reactions to high-stakes tests. One junior high teacher in a study conducted by Haladyna, Nolen, and Hass (1990) stated that "the test raises the anxiety level of everyone. The superintendent likes to use the scores to point out the teachers' weaknesses and create competition between the teachers. He thinks that good scores equal good teaching" (p. 62). In an extensive study of how teachers react to high-stakes testing programs, Smith (1991) reported five reactions. First, publication of test scores produces feelings of shame, embarrassment, guilt, and anger in teachers. This is most evident in low scoring schools or classrooms, but most teachers feel they could have done better. Consequently, many are disappointed in their level. This leads to the determination to do what is necessary to avoid such feelings in the future. Second, some teachers question the validity of the test and doubt whether a multiple-choice measure of reading, in fact, represents "real reading." Third, many teachers believe that testing has an adverse emotional impact on young children. They think that the testing processes cause inappropriate stress in young students, who worry and feel anxious and incompetent. Fourth, teachers often resent and regret the instructional time required by testing. In some cases, preparing, administering, and recovering tests may cost 100 hours of instructional time. Because the tests are not teaching, students are not learning in this time. Fifth, teachers often adapt to the tests that are high stakes in their school. This adaptation often means narrowing the curriculum and restricting their teaching to specific test-like activities. In reading, this may result in trivialization of the reading process. Because many tests are multiple choice, this leads to a loss of creativity, imagination, and critical thinking in the reading curriculum.

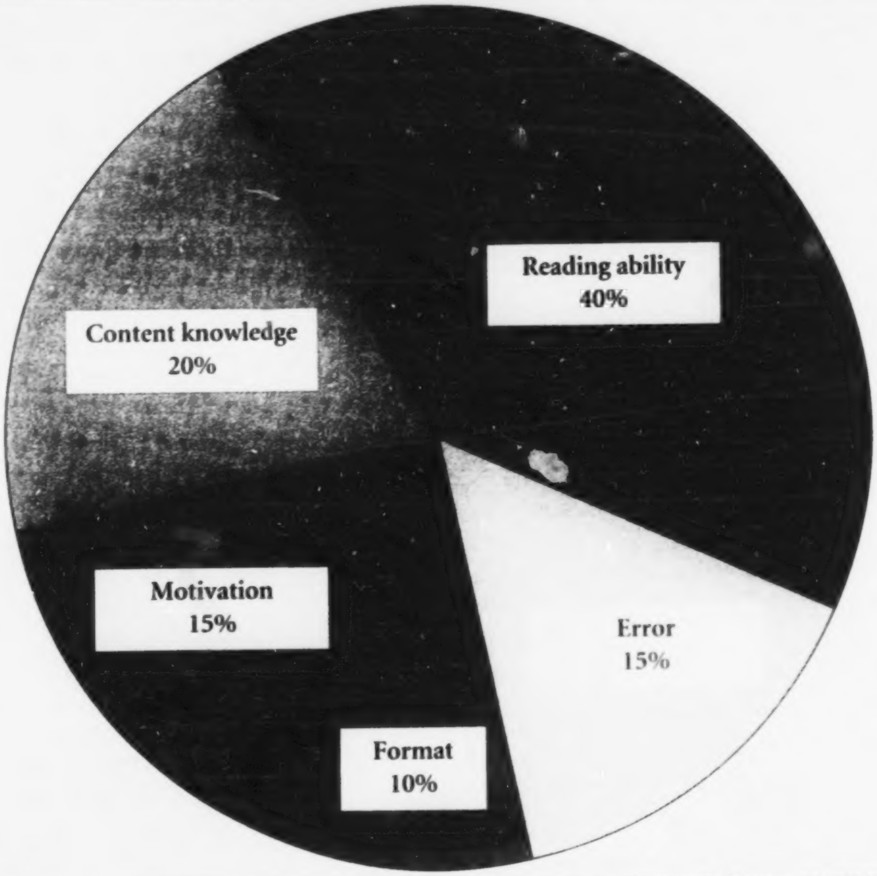
Although teachers may have adverse reactions to high-stakes tests, administrators from the school principal to the state superintendent of education frequently favor them. Administrators expect the tests to guide instruction, hold schools accountable, aid in curriculum planning, and evaluate school programs (Roeber, Bond & Connealy, 1998). Needless to say, administrative emphasis on the results of testing is what makes them "high stakes" for schools and teachers.

Students also react to tests. In the elementary grades, students believe that a test measures how much they have learned, identifying their knowledge and intelligence. According to Paris, Lawton, Turner, and Roth (1991), many students believe that the tests show which teachers are doing the best job in the classroom. They typically indicate that they try fairly hard and are reasonably motivated to succeed on the tests. However, middle and high school students have different views. They are less likely to say, "I gave my best effort on the test we took" than elementary students. Some secondary students believe that the tests serve the school's interest but not their own personal interests. Other students protect their self-esteem because they expect to do poorly and do not wish it to appear that they put forth maximum effort. At the same time, secondary students feel less prepared to take tests than elementary students. They have reported they do not have good strategies for taking the tests and are often anxious about their lack of skills. For secondary students, high and low achievers often react differently. High achievers are likely to report that they do well on reading tests, that the test was easy, and that they reread parts of the passage when needed. They show good strategies and positive self-perceptions. However, low achievers are likely to feel resentment, anxiety, lack of appropriate test-taking strategies, and decreasing motivation. All of these are obstacles to success on high-stakes tests. Consequently, it is important to address students' needs for test preparation.

Preparing Students to Take High-Stakes Reading Tests

In this section, I first discuss what goes into performance on a reading test, and then discuss how teachers can prepare students for all the requirements for successfully taking reading tests. The components of reading test performance are displayed in Figure 16.1. This pie chart shows that success on a reading test has many dimensions. These components for reading test performance are based on correlation research (Feuer et al., 1999). By looking at how different types of tests correlate

Figure 16.1. Components of reading test performance



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to each other and examining performance on different types of items, it appears that all these elements are important. As the pie chart shows, the most important factor was general reading competence and ability. This accounted for 40% of the difference between students. This was based on the fact that if a group of students was given two very different types of tests, such as a simple multiple-choice test and a complex long-term portfolio assessment, their scores were substantially correlated. Students who scored high on the portfolio assessment also scored high on the multiple-choice test. Of course, the agreement is not perfect and there are many exceptions. Also influencing general reading ability is general intelligence. Because a test is a mental activity, it will measure intelligence to some degree. We know this because student scores on reading tests are correlated with their scores on math tests of computation. However, it should be noted that general reading competence is by far the most important single factor for success on a high-stakes test. This has vitally important implications for teachers, which I will discuss later.

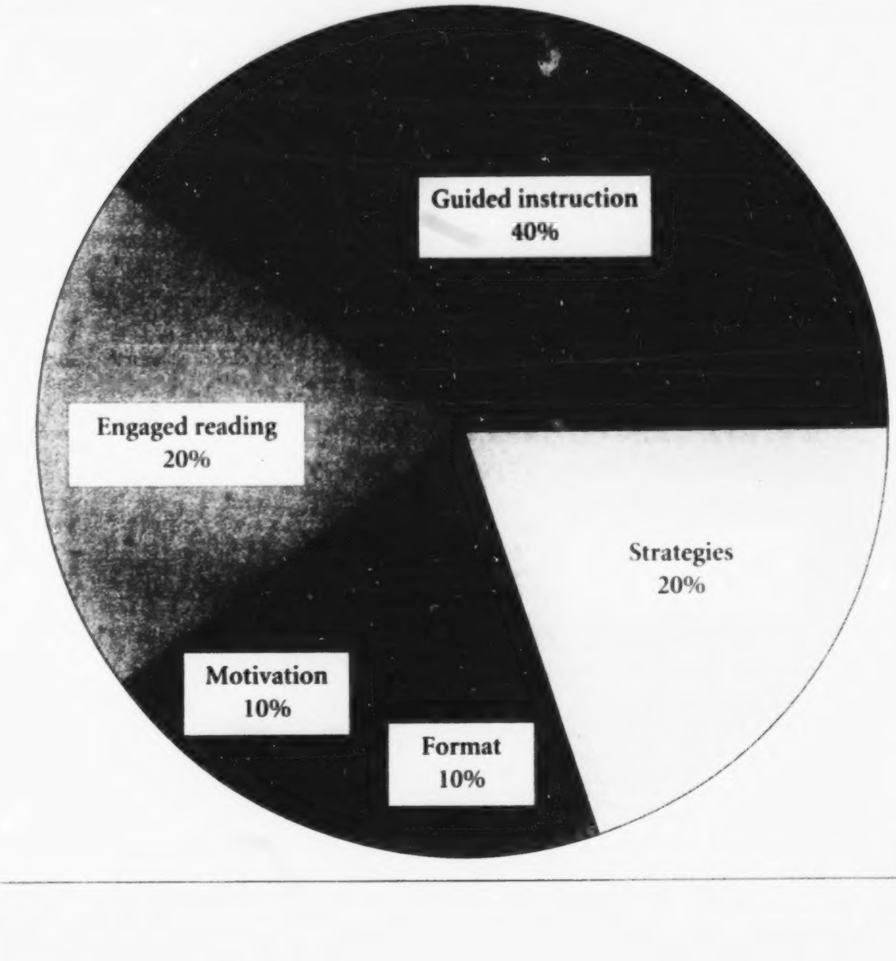
The pie chart also shows that student knowledge of the content of reading passages determines their success on tests. Reading comprehension tests on the same topic were much more highly correlated than reading comprehension tests of the same kind on different topics. If students do not have the content background on volcanoes, deserts, or early colonial history, their performance on a reading test containing such content will be relatively low. Next in importance are the two factors motivation and test-wiseness. Motivation for succeeding in a test is essential. Students who do not care about their success or who are highly anxious will score poorly. They fail to complete items, do not attempt difficult passages, give incomplete answers, and do not concentrate their cognitive energies. Test-wiseness—understanding the format of a test—is likewise important. Strategies for taking an essay-type performance assessment are different from strategies for taking a multiple-choice test. These format factors accounted for no more than 10% of the differences between students, however.

This pie chart was based on research evidence. Studies have shown that when two tests were identical in format and different in content their scores were highly correlated. However, their correlations were only slightly higher than two tests that differed in both format and content. This small increase is due to knowledge of format and test-wiseness of students.

These tests look different but they both require general mental activity and intelligence. Finally, it should be noted that no test is perfect. As the chart shows, 15% of the differences between students cannot be traced. These differences are unknown sources of error in the process of measurement.

Preparation for reading tests can be based on requirements for successful test performance. Figure 16.2 shows the components of successful test preparation. The largest dimension of this test preparation plan is guided instruction in reading and writing for both literary and informational texts. This piece of the pie is 40% of the total. This implies that 40% of specific test preparation should be good instruction in integrated reading-language arts. The second element of test prepara-

Figure 16.2. Components of reading test preparation



tion is strategy instruction. This accounts for 20% of the emphasis. The specific strategies needed for reading on the test should be taught explicitly. If the test is designed for grade 4 students and requires comprehension of the plot, character development, and resolution in narratives, these elements of story structure should be taught explicitly. Third, a substantial emphasis should be placed on engaged, independent reading to learn. All reading tests require speed, fluency, and comprehension. This can only be learned in motivated, extended independent reading. The objective of reading to learn during engaged reading is important, as the test situation requires this process. Fourth, practice on the format of the test is valuable. This accounts for 10% of the differences between students in test success. When taking multiple-choice tests, students should understand the strategies for responding to the items, selecting alternatives, and allocating their time appropriately. Students in performance assessments with extensive writing activities need help with understanding writing prompts and answering completely. Research shows that format practice is beneficial, but evidence also documents that excessive format practice may jeopardize test success (Feuer et al., 1999). Fifth, motivation for reading and test taking should be part of the preparation program. Motivational support can include alleviating students' anxieties, providing meaningful reasons for test success, enabling students to feel self-efficacy toward reading, and most important, fostering extensive amounts of reading throughout the school year.

The numbers in the pie chart in Figure 16.2 are valuable guides. Each number refers to the percentage of time that should be spent in that activity during a 10-week period preceding the test. For example, in the 10-week period preceding an annual high-stakes test of reading, 20% of the time should be spent on strategy instruction. This is related to general strategies in reading required by the test. Approximately 10% of the time should be spent on format practice so the students are familiar with the types of items and questions. The largest time block should be spent on guided instruction in integrated reading-language arts including a healthy array of texts. No less than 40% of the time, teachers should maintain their coherent instruction on fundamental objectives in reading-language arts. This is because test success is only slightly influenced by knowledge of format and slightly influenced by strategies for reading. It is highly influenced by general reading competence gained through substantial time spent in a coherent curriculum that is aligned with the test.

Preparation in Test Formats

When children face a test, the format may be entirely new to them. For example, primary students may face a multiple-choice format that is unfamiliar. Help in understanding the structure of the items is necessary. By providing direct instruction on what is expected in the testing format, teachers enable young primary students to show their true reading competence. For example, many students need to respond to analogies when taking a test of word meaning (e.g., The Woodcock Reading Mastery Test, word comprehension section). They are given one item, such as dog and elephant, and then are given a word such as *stone* and asked to identify the analogous item from the alternatives of *mountain*, *water*, *wood*, and *book*. *Mountain* is correct because it is large compared with the stone, as the elephant is large compared with the dog. Helping students understand the meaning of these analogies increases their reading skills as measured by tests with this format (Franklin, 1983).

Actually providing students practice with items from a test has been shown to increase first graders' test achievement scores (Eakins, Green, & Bushell, 1976). First graders who received a unit of instruction, lasting 1 to 2 hours in total time, achieved significantly higher scores than students with no preparation. However, students who received longer test format instruction did not surpass those given the limited 1- to 2-hour intervention. Format instruction is also valuable for high school students. Providing practice on the multiple-choice items in high school physics enabled low-achieving students to increase their test scores (Kirkpatrick, 1934). Test practice is especially beneficial to students with low test-taking skills. These students who are unfamiliar with tests items and lack strategies for reading tests are often found in mildly handicapped or learning disabled populations. More time spent with coaching on the formats of standardized test items has been shown to be beneficial for learning disabled students (Scruggs, Mastropieri, & Tolfa-Veit, 1986). However, it should be noted that the total time spent in format instruction was a 30-minute lesson for each of 5 days.

The phrase "test-wise" is applied to students who seem to have the ability to use the characteristics and format of a test or a test-taking situation to receive a high score. Millman and Bishop (1965) conducted an extensive study of test-wise students who achieved high scores on multiple-choice tests. Their characteristics included the following:

1. Using time effectively by beginning to work rapidly. Test-wise students omitted items that seemed unnecessarily difficult and used their time on items they could get correct.
2. Implementing error avoidance strategies that included paying careful attention to directions, determining the purpose of the task, and checking all their answers after completing the test.
3. Applying a guessing strategy to multiple-choice tests that encouraged guessing when alternatives within an item can be ruled out.
4. Using a deductive reasoning strategy that consisted of eliminating items known to be incorrect and choosing among other options.
5. Adopting an expected level of sophistication. Often multiple-choice items may be partly correct and finding the closest alternative is important.
6. Using cues in the items, such as selecting longer options if they appear to be plausible, avoiding extreme words such as *never*, and considering the relevance of specific details in options.

High test scorers at the middle school and high school levels are more likely to use these strategies than low test scorers. Some minimum time spent discussing and practicing these strategies may increase middle school and high school students' competence and comfort taking high-stakes tests. For example, in performance assessments, students are often expected to construct written responses to a wide array of different types of texts. In these tasks, the criteria for an acceptable response are important to the test taker. Teachers can help students prepare for these performance assessments by discussing the criteria for excellent constructive answers. These criteria are often presented in scoring rubrics that can and should be discussed and taught directly (Mehrens, Popham, & Ryan, 1998). In these open, constructed response items, teachers should foster students' self-evaluation skills. As students read, take notes, write, and perhaps revise, they are continually self-monitoring. This is a complex strategy that can be taught (Garner, 1982). Students need instruction in generalizing these strategies, such as identifying evaluative criteria and self-evaluating with respect to those criteria. Teachers can provide practice on a range of reading and writing tasks in the normal reading instruction program to foster these test-relevant strategies (Mehrens et al., 1998).

Preparation in Reading Strategies

Most reading tests depend heavily on reading comprehension. For many reading theorists, reading and comprehension are the same thing. They believe that students who cannot comprehend cannot read, and students who can comprehend are relatively high achievers. In light of the importance of reading comprehension, good test preparation includes direct instruction in the strategies necessary for effective reading comprehension. However, teaching reading comprehension strategies is a long-term enterprise. Reading comprehension grows constantly during a child's school career. Needless to say, it cannot be accomplished in 1 week prior to the test. Effective test preparation depends on a sustained, long-term plan of providing instruction and opportunities to learn effective comprehension strategies. For effective test preparation, a period of not less than 3 months might be devoted in the school curriculum for teaching reading comprehension strategies that will be required on a high-stakes test.

Strategies needed for success in high-stakes reading comprehension tests are well established. An abundance of research supports the importance of the following: (a) using background knowledge, (b) searching to locate information, (c) summarizing, (d) self-monitoring, (e) self-questioning, (f) concept mapping, and (g) self-explanation. Good readers are known to use these strategies when necessary and poor readers rarely use them. Furthermore, these strategies can be taught and instruction in them will improve high-stakes reading comprehension test performance. For example, Blanton and Wood (1984) suggest that direct instruction in these strategies improves test performance. The direct instruction recommended includes (a) teacher modeling of the strategies, (b) explanation of when and how to use them, (c) repeated opportunities for guided practice, and (d) extended independent reading. Furthermore, primary grade children have been shown to benefit from direct instruction on reading comprehension strategies (Schwartz, 1988).

To help students succeed on tests, long-term strategy instruction on using background knowledge is valuable. Many researchers have documented the benefits of teaching students to use background knowledge and to make inferences between what they already know and new information in the text during reading. For example, Hansen and Pearson (1983) showed that low achievers could improve their reading test scores by learning to use background knowledge and draw inferences as they encountered new text information. In addition, researchers have shown that good readers monitor their comprehension, whereas poor readers are less likely to engage in self-monitoring. For example, Garner (1982) showed that good and poor readers differed in how frequently they used a rereading strategy to improve their understanding. In addition, students who were taught to reread and practiced this strategy frequently improved their tested performance. Self-questioning also has been identified as a powerful strategy for reading comprehension. A large review of intervention studies by Rosenshine and Meister (1994) showed that self-questioning can be taught with a range of texts and it benefits reading comprehension if the instruction is extended over multiple lessons. Self-questioning is frequently used in reciprocal teaching, which is a technique known to increase reading comprehension on standardized tests (Lysynchuk, Pressley, & Vye, 1990).

Many tests require students to locate specific information within a story or informational passage. The processes of searching and locating information can and should be taught as comprehension-relevant strategies. Understanding text structure helps improve search capabilities. By understanding story structure, children can search for particular information about characters or events within stories. By learning the organization of information text, such as cause-effect or historical sequence patterns, children can learn to locate information needed to answer specific questions. Involving students in inquiry projects is an excellent technique to foster their learning to search and retrieve information. Within inquiry projects, students can be taught concept mapping. With this strategy, they can synthesize information gained from a variety of texts. The strategy of self-explanation also can be included in inquiry projects. As students encounter new text-based information, they can be encouraged to answer the question "Why?" This fosters their integration of new knowledge into old background information. Students who have learned to explain new information to themselves frequently score higher on reading comprehension tests. These strategies are useful for most students in mainstream classrooms, as well as for students with learning disabilities (Hughes & Schumaker, 1991).

It is evident that these strategies are complex. The optimal preparation for tests of reading comprehension that require these strategies begins several months prior to the administration of the test. Incorporating the comprehension strategies needed on a test into the mainstream curriculum planning is the most likely technique for building student confidence and self-confidence for successful test performance.

Test Preparation Through Engaged Reading

One of the most well-established findings in reading research is that reading comprehension is an outgrowth of a wide range of purposeful, motivated reading activities. If we look at standardized test performance in grade 3, 4, 5, or 6, the strongest predictor of achievement is amount of reading. Students who read widely and frequently are high achievers; students who read rarely and narrowly are low achievers (Guthrie, Wigfield, Metsala, & Cox, 1999). Amount of reading is such a strong predictor of reading comprehension that it outweighs intelligence, economic background, and gender. That is, students who are active, engaged readers will be high achievers even if they come from backgrounds with low income or low education in the family. Likewise, students who are infrequent, disengaged readers will be low achievers on standardized tests of reading even if their parents are well educated, their income is substantial, and literary resources are available at home (Reutzel & Hollingsworth, 1991). Different methods of teaching beginning reading and different methods of teaching comprehension strategies are less powerful than the acquisition of engaged active reading. In other words, any method or curricular approach that enables students to become engaged readers will influence standardized reading test performance. However, this is not an overnight process. Engaged reading does not become part of a child's lifestyle in a week or a month. This most important contributor to standardized reading tests achievement requires a long-term commitment from teachers and schools.

Because reading comprehension test scores are more influenced by students' amount of engaged reading than any other single factor, preparation for test taking should include support of engaged reading. A variety of innovative teachers and researchers have shown that long-term engaged reading can be increased with integrated instruction. When students are provided opportunities to connect reading and writing activities to integrated language arts, their engaged reading increases and reading achievement improves (Morrow, Pressley, Smith, & Smith, 1997). Further, when reading and writing are also linked to content learning in social studies and science, engaged reading is likely to be fostered.

Integrated curricula have been reported by Au and Carroll (1997) for the Kamehameha Early Education Program (KEEP), by Gaskins et al. (1994) at the Benchmark School, by Lapp and Flood (1994) in science and language arts, and by Guthrie and colleagues (Guthrie, Anderson, Alao, & Rinehart, 1999) in reading, writing, and science. In all of these instructional designs, students spend 42 to 120 minutes per day actively reading to learn science and social studies. In this process, they use all the strategies described previously and participate actively in writing to express their understanding, including being able to interpret narrative and being able to integrate information from multiple texts (Guthrie et al., 1999).

It is no surprise that the most important ingredient in high-stakes testing is difficult to teach. If reading comprehension was easy to provide for young children, the political controversies, accountability programs, and widespread testing systems would not be as prominent as they are. This implies that success on high-stakes tests is not provided in a quick fix. Rather, it is nurtured over time in integrated curricula that are planned as part of the central instructional objectives of a school.

Preparing Students for Test Taking Through Motivation

Tests are major sources of anxiety and worry for students. As Paris et al. (1991) found in a survey of 1,000 students in four states, many middle school and high school students felt resentment, anxiety, cynicism, and mistrust of standardized achievement tests. They did not feel satisfied with their scores and believed they were not well represented by tests. This increased their anxiety and decreased their motivation for test taking. Elementary school students were less likely to be anxious, but the ones who did experience anxiety showed low performance. It is increasingly recognized that scores on any test may be low for either cognitive or motivational reasons. Students may lack the reading skills or they may lack the motivation and self-efficacy to put forth maximum effort on the test (Sugrue, 1995; Waid, Kanoy, Blick, & Walker, 1978). Teachers can take steps to alleviate anxiety surrounding high-stakes test taking. Simply allowing students to see a few items and practice the item formats on a test will reduce anxiety and enable students to focus their thinking on a test (Kalechstein, Hocevar, & Kalechstein, 1988). It is likely that providing students specific "test-wise" strategies for handling the formats will enable them to feel prepared for the testing formats and thereby reduce anxiety or increase self-efficacy for test taking (Paris et al., 1991).

It is self-evident that some tests are "high stakes," whereas others are "low stakes." An example of a test that is low stakes for the student is the National Assessment of Educational Progress. Individual scores do not affect the student's life, school prospects, graduation, or other outcomes. Although this test is valuable for the U.S. Congress and the U.S. Department of Education, it is a "low stakes" event for the individual student. However, a standardized test or performance assessment that will be used to determine promotion to the next grade or high school graduation is high stakes for the student. Teachers should discuss the particular uses for the results of a given test. Students are entitled to know how scores will be used. If it is a high-stakes test, students deserve to know the consequences of successful or less successful performance. Having concrete information is likely to be informative and, in some cases, is anxiety reducing.

Although motivation surrounding the particular assessment event is important, more critical is motivation for reading in general. Students who are relatively low achievers, with relatively few good reading comprehension strategies, will not improve their test scores much through mere motivation for the test. However, these students may improve their tests scores by becoming more actively engaged readers during the school year. It has been shown that highly motivated students in grade 5 read 30 minutes per day for their own interest, whereas less motivated students read 10 minutes or less for their own interest (Wigfield & Guthrie, 1997). The difference between 30 minutes a day and 10 minutes a day is a large amount of time. It converts to a large number of pages per week, and a large number of books per month. If a fifth grader is facing a high-stakes test in April, the best thing the student can do is begin reading widely and frequently in October. If a teacher will encounter a high-stakes test for her classroom in April, her best preparation is to increase motivation of students for extended, learning-focused, independent reading as early as possible [illegible] the academic year. Moving students from 10 minutes of independent reading per day to 30 minutes of learning-oriented reading per day will be the strongest test preparation that can be provided. By fostering students to become engaged readers, the teacher enables them to gain cognitive competence and a sense of self-efficacy. These attributes will shield students against the shocks of unfamiliar and challenging test conditions and foster their ability to demonstrate their level of excellence (Lane, Parke, & Stone, 1998).

Hazards in Preparing Students for High-Stakes Tests

Excessive Format Practice

Earlier, I recommended providing explicit practice on the formats of the multiple-choice test and constructed response formats of the performance assessment. When they encounter a new test, students should not be surprised by the specific tasks in which they will be expected to show their reading skills. However, excessive practice in one or two formats can be hazardous for students, because students may "lock in" to a particular format, which is counterproductive. From excessive practice, students will learn particular procedures too well and apply them inappropriately. They will overexpect these formats in one or more tests and be confused if formats change. Although some exposure and some strategy learning is effective, excessive time in format practice is likely to be misleading because the test is measuring general abilities, not specific tasks.

Curriculum Narrowing

When high-stakes tests are heavily emphasized by administration, curricula frequently narrow. For example, if a multiple-choice reading comprehension test in grade 3 is required for promotion of students to the next grade, teachers focus the curriculum on multiple-choice reading activities. They use short passages, brief questions, and recognition responses. Although the narrowed curriculum may have some short-term benefits for some students who need it, the long-term effect is usually negative. In fact, a narrowed curriculum taught for a period of several months leads to decreases rather than increases in test scores (Yen & Ferrara, 1997). As Smith (1991) reported, when teachers focused instruction on a limited set of specific skills that appeared to be needed by a test, student achievement was likely to decrease in the long term. There is a simple reason for the decrease. A test is a sample of what the student can do. Although one test may sample Skill A with Content 1 in a given format, the next test faced by a student may sample Skill B with Content 2 in a slightly different format. Therefore, excessive practice on any one skill is unlikely to have the breadth needed by students to cope with the possible samples they may be faced with in a testing situation. Maintaining breadth of reading objectives, writing activities, and language arts integrations is the best way to avoid the hazard of a narrowed curriculum.

Incoherent Curriculum

In states that provide performance assessments, such as Maryland, Kentucky, and North Carolina, teachers are often encouraged to give explicit practice on the tasks in the performance assessments to familiarize students with them (Shepard, Flexer, Hiebert, & Marion, 1993). The question to be addressed is, How much task practice is effective?

Although the students should understand the formats of the tasks, the formats themselves cannot become the curriculum. Unfortunately, some misguided administrators expect teachers to provide practice on tasks in performance assessments for several weeks or several months. In these cases, the tasks become the curriculum. However, the tasks were designed for testing, not for teaching. Consequently, they do not serve the curriculum well. The curriculum may become disconnected, fragmented, and incoherent. A technique for avoiding an incoherent curriculum is to place extreme limits on task practice and to retain the goals, contents, and procedures of the mainstream curriculum.

Performance Orientation

In the classroom, teachers may be either learning oriented or performance oriented. Learning-oriented teachers emphasize understanding of major content themes. They aim to teach reading skills that can be used widely. In contrast, performance-oriented teachers are concerned with test scores, student achievement, and external evaluations. Researchers have studied the effects of these two orientations. Flink, Boggiano, Main, Barrett, and Katz (1992) asked some teachers to show their students how to understand a problem and to enjoy trying to solve it. These teachers were expected to be learning oriented. The researchers asked a second group of teachers to make sure students scored high on a certain problem-solving test. These were performance-oriented teachers. The teachers were told they would be evaluated based on their students' scores. Teachers in the performance-orientated group were likely to become extremely procedural, showing students specific steps for problem solving. The performance-oriented teachers did not emphasize understanding the problem or being creatively flexible in solving it. Performance-oriented teachers were anxious about their own instruction. The outcome was that students in the performance-oriented group were lower in achievement on the problem-solving test than students in the learning-oriented group. In other words, an emphasis on performance and high scores has a paradoxical effect. In fact, it decreases successful test taking. This principle applies to classrooms as a whole. In middle school science classrooms, Anderman and Young (1994) found that students of teachers who emphasized performance on tests and rewarded students with extrinsic incentives had lower achievement test scores than students of teachers who were learning oriented, emphasizing understanding and encouraging students to be pleased with their comprehension of new ideas. A performance orientation decontextualizes reading and therefore, it is likely to decrease the effectiveness of instruction.

Planning Instruction and Curricula in a High-Stakes Testing Environment

Linking Teaching Objectives to Testing

Optimal planning for test preparation begins with a simple step. The objectives of the test should be clearly linked to the objectives of instruction. If one test objective consists of comprehending character development in narratives, then one objective of instruction should consist of comprehending character development in narratives. This objective can be taught with stories or novels. It can be encouraged through reading, writing, and listening. Pursuing this objective for instruction will not result in any of the hazards presented in the previous section. This is a broad objective, not a narrow one, and it can lead to a coherent curriculum, not an incoherent one. Other objectives, such as gaining the main idea from a paragraph or writing to integrate across multiple texts, can be formulated as teaching objectives. When there is an alignment between the objectives of testing and instruction, test preparation is being optimized.

In a previous section, we described the value of practicing item formats. However, we also suggested that this be extremely limited in time and scope. Assessment tasks should not become the curriculum. It is not the format of the test that should be aligned with teaching, but the objectives that should be aligned with teaching.

Time Allocations

As indicated previously, three levels of test preparation are recommended for high-stakes testing in reading. At one level, students are given instruction and practice with test formats. The time allocated to this aspect should be a few days, but never weeks or months. It will be counterproductive if this time allocation is excessive. The second aspect of preparation is strategy instruction for reading strategies needed to perform well on the test, such as gaining the main idea, searching for information, or self-questioning. Time allocated to this portion of the preparation process should be measured in weeks and months. Strategy instruction is a long-term endeavor and strategy learning is time consuming. These strategies are often reflected in the objectives of a test and the objectives of a curriculum and can be incorporated into goals for instruction planned at the beginning of the school year. The third phase of test preparation recommended previously consists of planning for an integrated curriculum that will encourage long-term engaged reading. The time allocated to this phase of preparation should be measured in months and years. The planning across the grade levels within a school and across the months for a given school year should include integrations of reading, writing, and content that will enable students to gain the high-level skills most important on tests. These skills include cognitive strategies, metacognitive awareness, and motivation attributes.

Support for Reading Motivation and Self-Efficacy

Planning for test preparation involves generating ideas for motivational support. Teachers need to address the anxiety students face when they encounter tests. Teachers should help students feel efficacious about their test-taking abilities. However, beyond the immediate test context, teachers can develop students' intrinsic motivation for reading during the months prior to the high-stakes test. Intrinsic motivation will increase students' amount of reading independently and amount of reading in school, both of which will contribute to higher test scores (Guthrie & Alao, 1997).

Conclusion

High-stakes testing is everywhere. From grade 1 to 12, tests are used to decide promotion, graduation, special class placement, and school success. Although many teachers are beleaguered by the increase in testing, schools and teams of teachers can bring balance to the situation. On one hand, specific test preparation in the types of questions, expected responses, and content of a reading test will help students who are totally unfamiliar with the testing formats. On the other hand, too much practice testing can curtail the curriculum. It can do a disservice to children by narrowing their expectations for specific formats. Building actual reading ability is the best test preparation. Creating balanced instruction with vitality is the best antidote to excessive test-based accountability. Teachers should become proactive in fostering this balance. One good way to start is to discuss the Questions for Discussion that follow. A teacher may use the questions to organize the information in this chapter and to design a test preparation program.

Questions for Discussion

1. What are the objectives of the high-stakes reading tests in your classroom and school? How can these objectives be linked and integrated with the instructional objectives in your reading-language arts program?
2. How can you allocate time to the following test preparation phases: (a) format practice, (b) strategy instruction, and (c) integrated curriculum for engaged reading?
3. What are the potential hazards of high-stakes test preparation in your classroom or school?
4. What are the different reactions of teachers, students, administrators, and parents to the high-stakes testing in your school and classroom? How can these reactions be used to improve test preparation for success on high-stakes tests?

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Chapter 17

Multicultural Factors and the Effective Instruction of Students of Diverse Backgrounds

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What does research have to say about multicultural factors in the teaching of reading? This question has practical importance, because many teachers will find themselves teaching students of diverse backgrounds. In this chapter, I will use the phrase *students of diverse backgrounds* to refer to students who differ from the mainstream in terms of ethnicity, primary language, and social class. In the United States, these students often are African American, Asian American, Latino/a, or Native American in ethnicity; speak home languages other than standard American English; and come from poor or working class families. In discussing multicultural factors in the teaching of reading, I will focus on students of diverse backgrounds and what teachers and other educators might do to improve their reading achievement. I have chosen this approach, with its emphasis on learning, because of the pressure on students and teachers alike to achieve high standards.

The National Assessment of Educational Progress (NAEP), popularly known as the Nation's Report Card, has documented for many years the lower reading achievement of students of diverse backgrounds in the United States. The results of the 1998 reading assessment (Donohue, Voelkl, Campbell, & Mazzeo, 1999) show several important findings. At all three grades tested (grades 4, 8, and 12), white students had higher average reading scores than African American, Hispanic, and Native American students. This difference is notable, because the average reading scores of African American and Hispanic students at grade 12 were at roughly the same level as white students at grade 8. The NAEP evaluates reading performance in terms of three levels: basic, proficient, and advanced. Across all grade levels, 39–47% of white students were at or above the proficient level, compared with 10–18% of African American students and 13–26% of Hispanic students. Results of the 2000 reading assessment, in which only fourth-grade students were tested, indicate that African American, Hispanic, and Native American students continued to perform below their peers (Donahue, Finnegan, Lutkus, Allen, & Campbell, 2001).

The gap between the reading achievement of students of diverse backgrounds and mainstream students has been a concern for many years. However, it is becoming an even greater cause of concern because of the changing demographics of the United States. In the 1990s, students of diverse backgrounds constituted 35% of the enrollment in public schools in grades 1 through 12 (National Center for Education Statistics, 1997a), and approximately 13% of all students spoke a language other than English at home. In 2025, the population of students of diverse backgrounds will be even larger, and an equal or even greater proportion of children will be growing up in poverty. Poverty appears to be the factor most highly associated with low reading achievement. The scores of all students are depressed when half or more of the students in a school are from poor families, and the effect is even stronger when 75% of the students are from poor families (Puma et al., 1997).

As noted, there is a trend toward greater diversity in the student population. However, this same trend is not evident when we look at the population of teachers. Only approximately 13% of the teachers in the United States are of diverse ethnic backgrounds (National Center for Education Statistics, 1997b), and this situation is not likely to change in the near future. What this means is that at some time in their careers most teachers, who are generally of mainstream backgrounds, will find themselves working with students whose backgrounds are quite unlike their own. It is important, then, for teachers to understand how they can successfully teach reading to students of diverse backgrounds, especially when they may be starting out with little knowledge of the communities their students come from.

The theoretical perspective taken in this chapter is that of constructivism. In this perspective, people are seen as social actors who understand the world in terms of their lived experience (Schwandt, 1994). Learning takes place as people construct their own understandings of the world, based on what they have experienced. Our perceptions are shaped by our interactions with those around us, often the members of our cultural group. People may see the world differently, in part because of their interactions within one cultural group rather than another.

Extending the constructivist perspective, we can say that both language and literacy are human constructions or social artifacts. Children learn to read through social interactions with those around them, which permits them to construct their own understandings of what reading is and how it works. On a larger scale, we can see that learning to read and failure in learning to read are human constructions or the products of social systems (Cole & Griffin, 1983). To help students of diverse backgrounds, we must understand these social systems and how they can be changed to promote success, rather than failure, in learning to read in school (for a detailed discussion, see Au, 1998).

A growing body of studies points to the effectiveness of constructivist approaches in promoting the literacy achievement of students of diverse backgrounds (Au & Carroll, 1997; Dahl & Freppon, 1995; Guthrie et al., 1995; Morrow, 1992; Morrow, Pressley, Smith, & Smith, 1997). The approaches studied all involved the use of literature-based instruction. In this case, the term *literature* refers to good books, as contrasted with contrived texts, for example, those written to give students practice reading words with the *-at* pattern. Instruction is defined as the process of getting students interested and involved in an activity, then providing them with the support needed to complete the activity successfully (Au & Raphael, 1998). My own research has centered on the use of readers' workshops that include both teacher-directed activities, such as minilessons and guided discussions of literature, and student-directed activities, such as paired and independent reading. Literature-based instruction involves a continuum of strategies to be applied as children move up through the grades in elementary school: shared reading, guided reading, guided discussion, and literature discussion groups (also known as literature circles or book clubs). In addition, two strategies are considered important across the grade levels: teacher read-alouds and sustained silent reading (for a detailed description, see Au, Carroll, & Scheu, 2001).

This chapter discusses implications for improving the reading performance of students of diverse backgrounds, within the framework provided by constructivist approaches and literature-based instruction. I have chosen this focus because available studies conducted in actual classrooms suggest to me that these approaches provide students of diverse backgrounds with the best opportunities for overall growth in all aspects of literacy, including ownership and comprehension. Building from this constructivist perspective, five steps that can be taken based on research are recommended. First, teachers can attend to issues of motivation by establishing positive relationships with students and showing them that literacy is powerful and rewarding. Second, if students struggle as readers, teachers can provide them with rich instruction in the context of a readers' workshop, including instructional strategies such as guided reading, repeated reading, and reciprocal teaching. Third, teachers will want to understand how to conduct a readers' workshop with second language learners, focusing not on surface features of language but on the different life experiences and world views students may bring to class. Fourth, teachers can learn to teach in a culturally responsive manner, using a repertoire of instructional strategies and interactional patterns so that all students can be included in literacy learning activities. Finally, teachers can implement forms of assessment, such as portfolios, that provide multiple indicators of students' progress in reading and lead to implications for improving instruction. I discuss research related to each of these challenges, along with implications for practice.

First Challenge: How Can I Motivate My Students?

When I work with teachers in schools with students of diverse backgrounds, one of the teachers will always ask, "How can I motivate my students to read? If I could just get them to care about reading, I know I could teach them all the skills they need to know." Teachers often observe the following behaviors: Students get up from their seats several times during sustained silent reading to get another book and do not seem willing to read a book from start to finish. When the class visits the library, students wander around and often end up choosing books they do not really want to read. Students do not appear to be reading at home, although independent reading is a regular homework assignment. Often, students' indifference to reading appears to be part of a larger pattern of indifference to school.

Although students' lack of motivation to read may seem on the surface to be a rather simple problem, it is actually an extremely complex one. Students of diverse backgrounds may show not just indifference but resistance to school. Ogbu (1981) suggests that this resistance develops because students do not believe that cooperating with teachers and staying in school will do them any good in the long run. Realizing that students may have such a belief system often comes as a shock to teachers of mainstream backgrounds, who have been raised to view education as the route to a better life. Ogbu points out that students of diverse backgrounds may not place a high value on education because the connection between education and job opportunities has not been illustrated in the history of their own families. In his research in an African American community, Ogbu discovered the existence of a job ceiling. The job ceiling meant that, regardless of how far African Americans had advanced in education, they were always consigned to menial, low-paying jobs (see also Bartoli, 1995). The correlation of education with job prestige and income was much weaker for African Americans from this community than it was for middle class whites. The indifference and oppositional behavior students of diverse backgrounds show in school may result from their families' experience that education does not necessarily lead to a better life.

D'Amato (1988) extends Ogbu's views by analyzing the differences between classrooms of mainstream students and classrooms with many students of diverse backgrounds. In the former, D'Amato suggests, teachers hold control. Students are willing to comply and follow the teacher's directives, even when they are bored and see little personal value in the activities. The mainstream students comply because they understand the importance of remaining in the teacher's good graces, getting good grades, graduating from high school, and continuing on to college. Their family histories usually illustrate a strong connection between schooling and employment and other life opportunities, so mainstream students understand how important it is to remain in school and do well.

In classrooms with many students of diverse backgrounds, students, not the teacher, hold control. Teachers new to these classrooms often experience difficulties with classroom management and feel that students are working against the order they are trying to establish. According to D'Amato, these perceptions are accurate. For example, in classrooms with Hawaiian children, D'Amato observed a phenomenon he termed "acting." Acting, which begins as a playful form of misbehavior, is the students' way of testing the teacher. If the teacher fails to strike the proper balance between being strict and being kind and fair to students, acting will escalate into increasingly disruptive behavior. The standoff between students and teacher can continue for the entire school year. During this time, when the teacher has been unable to establish a positive relationship with the students, little instruction and academic learning can occur, because the teacher's and students' time in the classroom is consumed with management issues.

This broad view of schooling and its significance (or lack of significance) to students of diverse backgrounds provides a context for better understanding students' apparent lack of interest in reading and learning to read. Several steps may be helpful in this regard. First, the teacher will want to establish positive relationships with students. It may be helpful for the teacher to have an understanding of the students' cultural backgrounds and the values they bring to school. Once positive relationships and open communication have been established, students will accept the teacher as a role model and as a model of literate behavior.

Second, to serve as a good model of literate behavior, teachers must demonstrate the kind of literacy they want students to show. As Graves (1990) and others have argued, teachers must see themselves as readers and writers if they want students to read and write. Only then can they provide the sincere demonstrations of literate behavior that will convince students of the value of reading and writing (for classroom examples, see Carroll, Wilson, & Au, 1996). If teachers want students to read books of their own choosing during sustained silent reading, teachers must read books they have chosen for their own enjoyment. If teachers want students to share their chosen books with the class, teachers must participate by sharing the books they have enjoyed. If teachers want students to participate in literature circles, they must participate by presenting their own responses to literature.

The teacher cannot stop with demonstrations of literate behavior. If students respect the teacher, they are likely to follow his or her lead and read. However, the problem remains of helping students to gain a deep appreciation for literacy in their own lives. The teacher must somehow win the students over to schooling and to reading. How might this goal be accomplished? D'Amato (1988) suggests that teachers must show students, on a daily basis, how reading can be rewarding. Teachers can read a chapter a day aloud from high-interest, page-turning novels such as *Roll of Thunder, Hear My Cry*. They can have students read and discuss challenging and thought-provoking novels, such as *Tuck Everlasting* or *The Giver*. They can build on students' interests in working with peers by organizing book clubs or student-led literature discussion circles (McMahon & Raphael, 1997). Teachers can interview students to identify their interests and then connect them to books they will enjoy. Although we might wince at recommending books with titles such as *Extreme Skateboarding*, we should keep in mind the importance of helping students to develop their own tastes and interests as readers.

Ultimately, our goal with students of diverse backgrounds, and with all students, is to promote ownership of literacy (Au, 1997). Ownership has to do with valuing literacy, having a positive attitude toward literacy, and having the habit of using literacy. Students who have ownership make reading a part of their everyday lives outside of school. They read for purposes they set for themselves, perhaps to escape into another world, to follow the progress of a favorite singing group, or to learn the strategy for playing a new video game. Ownership is promoted as teachers develop classrooms as a community of readers. In a community of readers, participants gain a common literary background by reading, listening to, and discussing the same books. They learn to contribute to the community by introducing their classmates to new books and recommending books to their peers. Although all students can benefit from belonging to a classroom community of readers (Cairney & Langbien, 1989), this experience may be especially important to students of diverse backgrounds, by giving them a reason for staying in school.

Second Challenge: What Should I Do About Struggling Readers?

Another question teachers frequently ask me is how they can help the struggling readers in their classrooms. Often, teachers working with students of diverse backgrounds find that many in the class are reading far below grade level. Second-grade teachers tell me that their classes include several students whose reading is still emergent. These students cannot name all the letters of the alphabet and are not tracking print but still attending primarily to pictures when they read. Fourth-grade teachers report experiencing difficulty with students who can decode words accurately but have no understanding of the text. Naturally, these teachers are concerned about providing their students with the powerful instruction that will move them forward as readers.

To understand the kind of instruction likely to be beneficial to struggling readers of diverse backgrounds, it is helpful to look at what research says about the instruction these students usually receive. We begin with the observation that classrooms with students of diverse backgrounds are heterogeneous in many ways, including the range of reading achievement. The same second-grade classroom that includes emergent readers may have other students reading at the fourth- or fifth-grade level. It takes a great deal of expertise on the part of teachers to manage this range and conduct a classroom reading program that meets the needs of the emergent readers, the advanced readers, and all the students in between.

Often, as teachers and schools struggle to address this range of students, they resort to ability grouping and tracking. In elementary schools, students of diverse backgrounds are usually assigned to the lowest reading group in the classroom or sent out to receive remedial reading instruction. In high schools, students of diverse backgrounds are generally placed in the lower tracks. Many studies have documented differences in the nature of the instruction given to elementary students in high versus low reading groups (e.g., Allington, 1983) and to high school students in high versus low tracks (e.g., Oakes, Gamoran, & Page, 1992). In general, students placed in high groups and high tracks do more reading and receive instruction oriented toward comprehension and higher level thinking. Students placed in low groups and low tracks generally do less reading and receive instruction oriented toward word identification and lower level skills. Due to the limited learning opportunities associated with their assignment to low groups and low tracks, students of diverse backgrounds tend to make little progress in reading.

The challenge for teachers is to figure out how to work with struggling readers in a manner that addresses their needs in learning to read, within the context of the rich instruction provided by a readers' workshop, normally available only to stronger readers. The general principle is to use the same continuum of strategies with struggling readers (including teacher read-alouds, sustained silent reading, shared reading, guided reading, guided discussion, and literature discussion groups), but to augment these strategies with intensive instruction on the specific skills students need to succeed. For example, during shared reading, struggling readers will benefit from masking activities in which the teacher isolates particular words and calls children's attention to the initial consonant and other letters (Holdaway, 1979). In guided reading, students can benefit from minilessons that call their attention to spelling patterns, such as *-it* or *-ight*. Making words (Cunningham & Cunningham, 1992), an activity in which students spell words using a limited set of letters, may be used to supplement shared and guided reading. For example, if students have read *The Doorbell Rang*, the target word may be *doorbell*. Children will be given small trays with letter cards for *d, o, o, r, b, e, l, l*. The teacher will have them spell shorter words with these letters, such as *or, be, bed, rod, rode*, and so on, and finally *doorbell*. Making words encourages children to study how letters go together to form words, to look beyond the initial consonant, and to notice vowels as well as consonants.

Repeated reading (Samuels, 1979) is an activity effective in building students' fluency. In repeated reading, students tape record their reading of a short passage and keep track of how long each reading takes. Over time, by reading the same passage over and over, students gain the feeling of what it is like to be a proficient reader who experiences a smooth and easy flow through the text. Repeated reading can be used when students are engaged in guided reading, guided discussion, and literature discussion groups. Students can choose the passage they want to learn to read fluently from among the books their group is reading.

Comprehension is usually the biggest problem teachers face with struggling readers from the third grade and higher. Often, students seem to go on "automatic pilot" and decode words without being actively involved in comprehending the text. These students are not monitoring their own comprehension to see if what they are reading is making sense (Wagoner, 1983). Reciprocal teaching is an approach shown to be effective in improving students' comprehension by promoting active engagement with the text (Palincsar & Brown, 1984). Cooper (1997) suggests a simplified strategy for teaching comprehension monitoring based on reciprocal teaching. This strategy can be used as part of guided discussion. After students have silently read a brief section of the text, the teacher stops the group and does a think-aloud. In Cooper's example, the text is *The Bicycle Man.* The teacher says,

> This is a good place for me to stop and ask myself, *Does this make sense?* I understand that the author is telling this story and it takes place in Japan. I'm not sure if I know what a sportsday is. I think I'll reread page 3. (Reread page 3 aloud.) A sportsday must be like our field day where we have different events. (1997, p. 402)

The teacher then directs students to read the next part of the text silently to see if it makes sense to them. After students have finished reading, one of them is chosen to act as the teacher, to do a think-aloud just as the teacher did. The teacher prompts the student-teacher if help is needed, asking about unknown words, parts of the text that were poorly understood, and the section that might need to be reread. This procedure will need to be repeated on many occasions, but if it is implemented consistently, students will gradually learn to monitor their own comprehension.

Many other teaching strategies for assisting struggling readers have been developed. A good reference containing a thorough discussion of instruction and assessment of struggling readers, with numerous instructional strategies, is Lipson and Wixson (1997). Remember that these strategies will be most effective if they occur within the context of reading activities students find motivating and meaningful.

Third Challenge: How Can I Help Second Language Learners?

Frequently, teachers in schools with students of diverse backgrounds find that their classrooms include children who speak a first language other than standard English. Often, the children come from several different language backgrounds. Although some help may be available from a special teacher with training in teaching English as a Second Language (ESL) students, the main responsibility for the children's learning to read usually falls on the classroom teacher. Teachers want to know how they can help English language learners, students who may have varying degrees of proficiency in speaking English, learn to read well in English.

English language learners, like struggling readers, are often subject to instruction oriented toward lower level skills rather than higher level thinking. A review of research by Fitzgerald (1995b) and a recent study by Valdes (1998) suggest that commonly used activities include round robin oral reading, with the emphasis on correct pronunciation, grammar exercises, and copying sentences from the chalkboard. These activities limit students' opportunities in learning to read, hold little interest, foster boredom and disenchantment with school, and lead English language learners to fall even further behind in reading.

Another factor affecting the progress of English language learners is the limited availability of bilingual education. Research summarized by Snow (1990) suggests that the most effective way to build students' English literacy is to begin by teaching them to read and write in their home language. That is the approach recommended here. Yet, even if schools and parents support this view, the demographics and logistics in many schools can make it difficult to implement bilingual education. In some areas, most English language learners come primarily from one or two language backgrounds, making it feasible to have, for example, a Spanish or Cantonese bilingual program. Often, however, students are from many different language backgrounds, and qualified teachers who speak these different languages may be in short supply. It is not uncommon, then, for the classroom teacher to have the responsibility of teaching English language learners to read, perhaps with some assistance from a bilingual aide.

What can teachers do to help English language learners learn to read and write in English? These students will benefit from all the approaches recommended so far in this chapter: literature-based instruction and the readers' workshop, the continuum of strategies, and intensive instruction to develop reading skills and strategies (see also Fitzgerald, 1995a; Freeman & Freeman, 1992). Fitzgerald's (1995b) review of research identifies areas in which focused, intensive instruction appears beneficial for English language learners. These include vocabulary, expository text structure, and metacognition.

While working with English language learners within these approaches, teachers will want to be aware of other factors affecting their learning to read. One of the factors discussed by Valdes (1998) is the difference in the life experiences and world views of the teacher versus the students and their families. Valdes writes about Garden School, representative of many schools witnessing sweeping changes:

> According to one teacher who worked closely with the Latino community, most teachers at Garden School could predict few of the problems their new students would encounter. Most knew little about poverty. They had little notion of why working parents might not be able to make midday appointments with their children's teachers. They suspected disinterest, apathy, and even antagonism, and were baffled and troubled by the failure of these parents to "care" about their children.
>
> The new students, on the other hand, did not quite yet know how to be American middle school students. They knew little about school spirit. They were not sure why being in band or in chorus or in the computer club might be important. They frequently confused teachers' friendly demeanor with permissiveness, and they quickly found themselves in trouble. They understood little of what went on around them and often they became discouraged and disinterested. (p. 5)

As Valdes implies, the issue is not simply one of language but of cultural differences. Sometimes students will need to be taught how to participate appropriately in a reading activity. For example, some students may have learned not to respond until they are sure they know the right answer. These students will need to understand that, in a literature discussion group, there may be questions without right answers, to invite the sharing of best guesses and opinions. If students are not participating or not participating appropriately in a reading activity, teachers may want to discuss the situation with students and model and explain the desired behavior. Teachers may also want to make use of bilingual students who may be able to act as translators or as cultural mediators. Observations by Valdes suggest that one of the difficulties is the tendency for schools to isolate English language learners from English-speaking students. To solve this difficulty, teachers may want to pair English language learners with students who are proficient speakers of English and familiar with classroom routines, so that both language and classroom social skills can be learned from peers.

English language learners differ widely in the literacy abilities they bring to school. Research suggests that children only need to learn to read and write once (Snow, 1990). If a student is already literate in another language, the teacher should seek to build on this ability when teaching the student to read in English. In some cases, for example if the student speaks Spanish, the teacher may encourage the student to use his or her knowledge of cognates (words similar in both languages). In other cases, if the language is not related to English, for example if the student speaks Japanese, the teacher may encourage the student to use existing reading strategies, such as accessing prior knowledge related to the topic of the text.

A factor that handicaps the academic advancement of English language learners is teachers' tendency to be overly concerned about surface features of language, such as correct pronunciation of English, rather than the content of the ideas students are trying to communicate. Minor errors in students' pronunciation may lead teachers to underestimate students' ability to read and comprehend English texts (Moll & Diaz, 1985). Instead of focusing on surface features, teachers should respond to students at the level of ideas. In their responses, teachers should model the use of standard English, so that students will hear and learn the conventional way in which their ideas can be expressed. If students believe that what they have to say is important, they will have the confidence to learn the language needed to express those ideas. Although skills such as grammar and pronunciation are important, in general, corrections in these areas should be made only after teachers are certain that correcting a student will not lead him or her to withdraw from active participation in reading activities.

Fourth Challenge: How Can I Teach Reading in a Culturally Responsive Manner?

Often, teachers find themselves working in classrooms with students from cultural backgrounds unlike their own. The teacher may be of one ethnicity, the students of another. For example, I have worked with many Japanese American teachers in classrooms with Hawaiian students. More commonly, especially in urban areas, the students may be of more than 10 different ethnicities and speak more than six different home languages. The teacher is unlikely to have knowledge of all these cultures and languages. Also, the teacher may reside in a middle-class suburb some distance from the school and so be unfamiliar with the community where the students live. In essence, the teacher is from one world, and the students are from another.

Many teachers are well aware of the distance that separates them from their students, and they want to gain an understanding of how to teach reading effectively, while showing respect for their students' cultures. The phrase *culturally responsive instruction* refers to teaching that reflects the values and standards for behavior of students' home cultures. Over the years, I have given numerous presentations on the concept of culturally responsive instruction, using examples from research that my colleagues and I have conducted in classrooms with Hawaiian children. This research shows that Hawaiian children pay better attention, discuss more text ideas, and make more logical inferences during reading lessons when the teacher structures interaction following the rules for talk story, a common speech event in the Hawaiian community (Au & Mason, 1981). In conventional classroom recitation, the teacher asks a question, calls on one student to answer, and then evaluates the student's response. In talk-story-like reading lessons, the teacher asks a question and then allows the children to respond as they see fit. Usually two or three students will answer at once, using overlapping speech. Gradually, other students join in. In effect, the students collaborate to answer the teacher's question and to interpret the text. Of course, it takes practice for teachers to learn how to manage talk-story-like discussions effectively.

Anthropologists remind us that culture is a whole, and that each aspect of a culture reflects the underlying values of that cultural group (Spindler & Spindler, 1990). In the case of talk story, the underlying value reflected is that of cooperation. In many Hawaiian families, children are raised to value cooperation and the contributions they can make to the well being of the extended family, rather than to value competition and individual achievement. Other research in classrooms with Hawaiian children indicates that the students prefer to work in groups with their peers, rather than completing assignments individually (Jordan, 1985). This preference, too, reflects the value the students attach to cooperation as opposed to competition.

Considerable research has been conducted on culturally responsive instruction. Au and Kawakami (1994) summarized many of these studies in a review. The practical implications that can be drawn from this review are the following: Teachers will want to develop a repertoire of strategies for student participation, having students work as a whole class, in small groups, in pairs, and as individuals. Through experimentation, teachers will discover which types of groupings seem effective for various students. Teachers will want to understand different ways of inviting students' responses to activities, whether through calling on individual students, having each student give a brief response, or reviewing students' written responses to literature. Again, through experimentation, teachers will discover which modes of responding seem most comfortable for various students and draw out their best thinking. However, the idea is not just to persist with the types of groupings and ways of responding that seem most comfortable for students. Teachers need to help students learn to respond in ways that may be unfamiliar and uncomfortable for them, so that they will be prepared to succeed in the variety of classroom situations they are likely to encounter. For example, teachers will want to prepare Hawaiian children, who are comfortable with the talk story style of participation, to behave appropriately in conventional classroom recitation lessons, in which they are required to raise their hands and speak one at a time.

The purpose of culturally responsive instruction is to promote academic achievement, not just to build self-esteem or cultural identity, although these may be added benefits of the approach. Delpit (1991) and Ladson-Billings (1995) have stressed the importance of making sure that African American and other students of diverse backgrounds develop the academic skills to be able to compete in the larger society, because students will be judged on the basis of how well they can speak, read, and write in standard English. The main difference between culturally responsive instruction and other approaches to the education of students of diverse backgrounds, such as basic skills approaches, is that an effort is made to teach students in a manner that does not require them to give up the values of their home cultures.

Ladson-Billings (1995) has used the term *culturally relevant pedagogy* to describe an approach that addresses student achievement and cultural identity while challenging the inequities that exist in school. In her research (1994), she studied eight teachers, some African American and some white, who were able to promote the academic achievement of their African American students. She points out that African American students may see a conflict between negotiating the academic demands of school while at the same time displaying their cultural competence. The teachers in her study were adept at reducing this conflict by bridging the gap or making links between the students' culture and academic learning. For example, one teacher used rap songs as a way of teaching the elements of poetry. Ladson-Billings noted that the teachers were quite different in their styles of teaching, some appearing more structured and traditional, and others more flexible and progressive. What united the teachers was a common set of beliefs. Some of the beliefs the teachers shared were that all students could learn and be successful academically; that they, as teachers, needed to become members of the community surrounding the school; and that they should build positive relationships with students and develop a community of learners in the classroom. Ladson-Billings concludes,

> A common question asked by practitioners is, "Isn't what you described just 'good teaching'?" And, while I do not deny that it is good teaching, I pose a counter question: why does so little of it seem to occur in classrooms populated by African American students? Another question that arises is whether or not this pedagogy is so idiosyncratic that only "certain" teachers can engage in it. I would argue that the diversity of these teachers and the variety of teaching strategies they employed challenge that notion. The common feature they shared was a classroom practice grounded in the educability of the students. (1994, p. 484)

Fifth Challenge: How Can I Assess My Students' Progress in Reading?

Educators' thinking about assessment has changed dramatically over the past decade, making assessment one of the most challenging issues faced by classroom teachers. Teachers usually are most interested in using assessment to improve instruction, which in the view of Valencia (1998) and other experts is the main purpose for assessment. However, in pursuing this view of assessment, teachers in schools with students of diverse backgrounds often find themselves caught in the middle, between meeting the demands of standardized tests and attempting to implement authentic or classroom-based forms of assessment, such as portfolios.

The tension comes about in the following way: Schools in low-income areas that have a large number of students of diverse backgrounds typically have standardized test scores much lower than schools in affluent areas. As mentioned earlier, standardized test scores in schools drop as the percentage of students from low-income families increases. In Hawaii, as well as other states and districts, standardized test scores are the primary means used to ensure accountability. That is, the public looks at standardized test scores as the main indicator of whether the public schools are doing a good job of educating students. When the standardized test scores for individual schools are published in the newspaper, the low scores shown by schools in low-income areas cause the public to assume that these schools are not doing as good a job as schools in affluent areas. Another possibility, not considered by the public, is that standardized tests are actually measures of the cultural capital of middle-class students, rather than measures of students' literacy, broadly defined (Au & Raphael, 2000).

Educators working in schools with low test scores feel pressure to raise test scores. On the surface, this approach seems synonymous with improving reading instruction and helping students to become better readers. In reality, however, efforts to raise standardized test scores rarely have a positive effect on students' learning to read in school and may increase the already detrimental effects of these tests on students' well-being (Paris, Lawton, Turner, & Roth, 1991). One reason is that standardized tests tend to be based on a view of reading that is necessarily limited because of the format of the test. Although this situation is slowly changing, standardized tests have centered on multiple-choice questions with right or wrong answers. Higher level thinking with text, such as interpreting a character's motives or constructing a theme, is difficult to assess with such a restricted format. When teachers are asked to raise test scores, they usually respond by narrowing the curriculum to focus on the lower level skills and content covered in the test. Although this approach is unethical and should be avoided (Haladyna, Nolen, & Haas, 1991), those who work with schools in low-income areas will recognize it to be a common practice. An emphasis on test scores leaves teachers with less time for meaningful, motivating activities emphasizing higher level thinking and involving students in the full process of reading, such as literature discussion groups focused on the interpretation of novels. In this sense, an emphasis on standardized testing can have a detrimental effect on the learning to read of students of diverse backgrounds, because it may move instruction away from higher level thinking about text and because it may make instruction less meaningful and motivating for students.

Many teachers are willing to try new forms of assessment that can reflect the view of reading as a process of constructing meaning, capture students' strengths and weaknesses as readers, and guide instruction. Portfolio assessment has gained popularity because it can meet all of these goals. However, my initial research with portfolios in classrooms with Hawaiian students (Au, 1994) taught me an important lesson: Changing the form of assessment does not automatically change the achievement results. In this instance we had introduced a new language arts curriculum, centered on literature-based instruction, taught during the readers' workshop, and on the process approach to writing, taught during the writers' workshop (for a full description, see Au et al., 1997). The new curriculum incorporated portfolio assessment tied to grade-level benchmarks based on national standards and other reference points, such as the scope and sequence charts of basal reading programs. In the first 2 years of implementing this curriculum, the results obtained for reading comprehension with portfolio assessment were similar to those obtained with standardized tests, indicating that approximately two thirds of the students were performing below grade level. My colleagues and I learned that, important as it was to use an appropriate form of assessment, it was even more important to change instruction. In this case, we found that more time needed to be devoted to reading comprehension through small-group, teacher-led, guided discussion of texts (or experience-text-relationship lessons, see Au et al., 2001), and through lessons with teacher modeling of specific comprehension strategies, such as comprehension monitoring.

Notable improvements in reading comprehension were obtained after these changes in instruction were implemented, as shown by the results of portfolio assessment (Au & Carroll, 1997). Only slight improvements were seen on standardized test scores. We had anticipated this outcome, because we knew that standardized tests were likely to be less sensitive than portfolio assessment to the gains made by low-income students in areas of higher level thinking, such as reading comprehension. One benefit of portfolio assessment in schools with students of diverse backgrounds is that it may offer a means of demonstrating gains in student learning not captured by standardized tests.

One of the possible drawbacks of portfolios used for the purposes of evaluation is that they are directed toward an external standard for achievement. For example, the portfolios described earlier were directed toward grade-level benchmarks. Such an approach may leave little room for students to set their own goals for themselves as readers. For example, a sixth-grade student may want to read all the books by Lawrence Yep. Although worthy, this goal is unlikely to match a particular grade-level benchmark. To promote the ownership so important to the reading development of students of diverse backgrounds, portfolios should be designed not just for their connection to external standards but also to support students' goal setting and reflection on their own learning.

Conclusion

One of the greatest challenges faced by educators is that of bringing students of diverse backgrounds to high levels of reading achievement. This chapter has discussed research related to five issues commonly raised by teachers: how to motivate students, how to help struggling readers, how to work effectively with English language learners, how to teach in a culturally responsive manner, and how to assess students' progress. One of the main themes growing from the research is that traditional approaches to teaching reading to students of diverse backgrounds have not been effective. Instead, these traditional approaches, such as grouping and tracking and a heavy emphasis on skill instruction, have formed systems or patterns that put students of diverse backgrounds at a continued disadvantage in learning to read. The solution to the problem seems to be that we must put new systems or patterns in place. Our overall philosophy of teaching, learning, and literacy must be the same for students of diverse backgrounds as for all other students. We must make sure that students of diverse backgrounds have the opportunity to participate in literature-based instruction and the readers' workshop, following a continuum of teaching strategies that involves them in motivating, meaningful reading experiences. The continuum of strategies is supplemented with intensive instruction, as needed, in areas such as decoding and comprehension. Although the challenge is great, recent research with constructivist approaches appears to offer educators the best chance of narrowing the literacy achievement gap.

Questions for Discussion

1. Create a profile showing the diversity among the students enrolled in a particular school. Go over any statistics available for the school that indicate the ethnicity of the students, their language backgrounds, and how many are eligible for free lunches. Interview several teachers who have been in the school for a while to find out whether the profile of the student body has changed in recent years or remained the same over time. Discuss your findings.
2. For the same school, identify the programs or initiatives in place to support the literacy learning of students of diverse backgrounds. Interview the principal, another administrator, a curriculum specialist, or a resource teacher to learn more about these programs. Analyze the possible strengths and weaknesses of these programs and initiatives in light of the ideas presented in this chapter.
3. Make arrangements to observe for a least 1 hour in a classroom with many students of diverse backgrounds. Make notes about the classroom environment and instructional approaches. What factors seem to support the students' academic learning? What factors seem to hinder their learning? Consider your observations in light of the recommendations in this chapter.
4. Find out about the assessment procedures used at the school, district, and state level. Analyze the pros and cons of these assessment procedures in terms of the goal of improving instruction for students of diverse backgrounds.

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Author Index

Note: Page numbers followed by *f* indicate figures; those followed by *t* indicate tables.

A
Abbott, J., 341, 342, 350
Abello, B., 180
Abrahamson, R.F., 355
Achilles, C.M., 273, 277, 278
Ackerman, K., 337, 345
Ada, A.F., 61, 355
Adams, E., 273
Adams, M.J., 6, 39, 94, 292, 344
Adler, D.A., 350
Afflerbach, P., 70, 206, 294, 305, 352
Alao, S., 382, 383, 388
Alegria, J., 115
Alexander, A., 274
Alexander, K.L., 263
Algozzine, B., 269
Allen, J., 63–64
Allen, N.L., 393
Allington, R.L., 70, 78, 94, 172, 264, 267, 268, 269, 271, 274, 275, 276, 279, 281, 282, 399
Allsop, D., 267
Almasi, J., 214, 228, 352
Alvermann, D.E., 17, 187, 314, 363
Amanti, C., 51, 56, 58
American Educational Research Association, 337
Ammon, P., 340
Amsterdam, L., 340
Anderman, E.M., 385
Anderson, E., 382, 383
Anderson, M., 276
Anderson, R.C., 4, 19, 50, 70, 96, 140, 141, 142, 144, 170, 213, 222, 293, 294, 338, 340
Anderson, T.H., 217, 220
Anderson, V., 246*t*, 250, 252, 252*t*, 302
Andrews, L., 158
Angell, A.L., 72
Anglin, J.M., 141, 144
Apple, M.W., 43
Applebaum, D., 356
Armbruster, B.B., 217, 220
Artley, A.S., 188
Asnarow, J., 215
Au, K.H., 73, 209, 210*f*, 275, 382, 394, 397, 398, 404, 405, 407, 408
Auerbach, E.R., 59
August, D.A., 69
Aulicino, C., 49
Ausubel, D.P., 190, 213
Ayersman, D.J., 319, 320, 321, 328

B
Babbit, N., 150
Baker, A.J.L., 71
Baker, J.M., 269, 278
Baker, R.L., 191
Balcolm, M., 320
Bales, R.J., 299
Ball, E., 123, 124
Bangert-Drowns, R., 316
Barnes, W.S., 69, 85
Barnett, W.S., 72, 272
Barr, R., 9, 140, 141, 277, 340, 342
Barrett, M., 386
Barron, R.F., 190, 191
Bartlett, B.J., 216, 217
Bartoli, J.S., 396
Base, G., 149
Baumann, J.F., 10, 215, 225, 339
Beach, R.W., 217
Bean, T.W., 185, 191, 192, 193, 299
Beatty, A.S., 352, 359, 362
Beaver, J., 350, 358
Beck, I.L., 140, 141, 143, 146, 151, 152, 156, 160, 196, 215, 230, 231, 293, 294, 340, 355
Becker, D.A., 320
Becker, H.J., 320, 323, 324

Becker, W.C., 141
Beers, J., 352, 355
Bembry, K.L., 276
Bennett, L., 211, 275, 394
Benson, N., 273
Bereiter, C., 215
Berenstain, J., 92
Berenstain, S., 92
Berent, I., 93, 95
Bergman, J.L., 214, 228, 352
Berliner, D.C., 6, 262, 366
Berlyne, D.E., 190
Berrueta-Clement, J.R., 72, 272
Bertelson, P., 115
Bertenthal, M.W., 371, 374
Betts, E., 345, 362
Biddle, B.J., 6, 262
Biddle, W.B., 222
Biemiller, A., 145, 172
Bird, M., 215
Birdyshaw, D., 185
Birkerts, S., 316
Bishop, C.H., 378
Bizar, M., 39, 40*t*, 43
Blachman, B., 123, 124
Blachowicz, C., 143, 144, 352, 355
Black, R., 124
Blackstock, J., 323
Blackstone, T., 4, 19, 50, 141, 147, 150
Blanton, W.E., 380
Blick, K.A., 383
Block, C.C., 206, 276
Bluth, G.J., 192, 216
Boggiano, A.K., 386
Bond, G.L., 2
Bond, L., 373
Book, C., 246*t*, 247, 248, 249, 252*t*, 302
Borden, L., 273
Bortelson, C., 344, 350
Boutry, S., 344, 350
Boyd, C.D., 352, 355
Brackstone, D., 273
Bradley, L., 92, 123, 124
Brandt, D.M., 192, 216
Bransford, J.D., 145
Bransford, J.W., 192
Brassell, D., 62
Bremer, C., 170
Brennan, A., 340
Breznitz, Z., 293
Bridge, C., 340
Briggs, C., 50
Brock, C.H., 275
Brooks, G., 274
Brown, A.L., 145, 192, 221, 225, 226, 299, 300, 400
Brown, K.J., 211
Brown, R., 229, 246*t*, 251, 252, 252*t*, 253, 301
Bruce, B.C., 314, 316, 326, 340
Bruner, J., 190
Bryant, D.M., 72
Bryant, P., 92, 94, 123, 124
Bryk, A., 276, 278
Bryson, S., 323
Buikema, J.L., 144
Burchinal, M., 72
Burkes, A.M., 141
Burns, M.S., 4, 9, 69, 78, 107, 166, 262, 283, 351, 352
Bus, A., 50, 110, 129, 273
Bushell, D., 378
Byrne, B., 118, 119
Byrne, J., 389

C
Cahen, L.S., 366
Cairney, T., 398
Cake, H., 245
Caldwell, J., 358
Calfant, J.C., 266
Calfee, R.C., 80, 140, 141, 156, 338, 350
California Department of Education's Language Arts and Foreign Languages Unit, 355, 356, 360, 361
California English/Language Arts Committee, 341, 355, 360
Cambourne, B.L., 28, 29, 31, 37
Campbell, J.R., 17, 352, 359, 362, 392, 393
Campione, J., 192, 221
Carolina Abecedarian Project, 272
Carr, E.M., 298
Carroll, J.B., 153, 342, 344, 345
Carroll, J.H., 73, 275, 382, 394, 397, 408

Carter, B., 113
Cary, L., 115
Cassidy, J., 93, 141
Cassodos, L., 197, 198
CAST, 320, 323, 328
Castle, J., 126
Cattagni, A., 311
Catto, S., 276
Cazden, C.C., 274
Celano, D., 280
Center for the Improvement of Early Reading Achievement, 9
CEO Forum, 325, 329
Chall, J., 345, 349
Chandler, J., 69, 74
Chapman, S., 223, 245
Chen, C., 319, 321, 322
Chen, R., 276, 279
Chomsky, C., 177
Christian, C., 341, 342, 350
Clark, E.V., 156
Clark, K., 276
Clark, M.M., 50
Clarke, L.K., 97
Clay, M., 125, 274, 345
Clements, A., 149
Clifford, G.J., 140
Cocking, R.R., 145
Coerr, E., 350
Cohen, J., 128
Cole, M., 394
Coles, G., 40*t*, 273, 283, 298
Collins, C., 302
Colt, J., 276
Commeyras, M., 17
Connealy, S., 373
Conway, T., 274
Cooper, H.M., 21
Cooper, J.D., 400
Corman, L., 341, 342, 350
Corno, L., 62
Cox, K.E., 382
Cramond, B., 179, 275
Creech, S., 147
Crone, D.A., 72
Cross, D.R., 214, 225
Cross, S., 4, 19, 50, 141, 147, 150
Crossland, I., 92
Cuban, L., 316
Cubillas, C., 62
Cullinan, B.E., 76, 355
Cunningham, A.E., 70
Cunningham, J.W., 98, 221, 222, 399
Cunningham, P.M., 91, 96, 98, 101, 103, 271, 273, 275, 281, 399

D
Dahl, K.L., 272, 394
D'Ailly, H., 245
Dale, E., 156, 345, 349
D'Amato, J., 396, 397
Daniels, H., 39, 40*t*, 43
Dansereau, D.F., 217
Darling-Hammond, L., 281
Davey, B., 195, 299
Davidson, M., 120
Davies, P., 153, 342
Davis, C., 120, 121
Davis, J.N., 217
Davison, A., 338, 339
Day, J.D., 221, 299
Deacon, T.W., 41*t*
DeBruin-Parecki, A., 71
Decker, S.N., 69
Defee, M., 91, 96
DeFord, D.E., 73, 276, 278
DeFries, J.C., 69
De Glopper, K., 143
Deighton, L.C., 144
Delgado-Gaitan, C., 49
Delpit, L., 64, 405
DeLuca, T., 273
Denckla, M.B., 276, 279
Denner, P.R., 213
Desai, L., 320
Dewey, J., 365
Dewitz, P., 298
Diaz, S., 403
Dickinson, D., 76, 272
Diffily, D., 352, 355
Dillon, A., 319, 321
Ding, B., 115
Dinkin, J., 320
Dishaw, M.M., 366
Dishner, E.K., 187
Dobrich, W., 50

Dohower, S., 179
Dolan, L.J., 73, 275
Dole, J.A., 143, 206, 220
Donant, L., 221, 222
Donlan, D., 216, 223
Donohue, P.L., 17, 392, 393
Dorsey-Gaines, C., 52, 53
Downing, J.A., 88
Draper, K., 10
Dressman, M., 341, 342, 350
Drum, P.A., 140, 141, 156
Duffett, A., 49
Duffy, G.G., 206, 220, 246, 246*t*, 247, 252, 252*t*, 276, 281, 283, 302
Duffy, T.M., 25, 26, 28, 36
Duffy-Hester, A.M., 10, 74, 78, 91, 275, 277, 339
Duin, A.H., 146, 151, 152, 160
Dunn, N.E., 50
Durkin, D., 10, 20, 49, 222, 233, 303
Durndell, A., 321
Dwyer, M.M., 320
Dykstra, R., 2

E

Eagleton, M.B., 315, 318
Eakins, D.J., 378
Earle, R.A., 191
Echevarria, M., 303
Eckels, M., 320
Edelsky, C., 10
Ehri, L.C., 76, 110, 112, 115, 123, 125, 126, 129
Eisenberg, P., 173
Elbow, P., 199
El-Dinary, P.B., 214, 228, 352
Eldred, J.C., 321
Elkind, D., 50
Elkins, J., 266, 268
Elley, W.B., 41*t*, 262
Ellis, A., 125
Entwhistle, D.R., 263
Epstein, A.S., 272
Epstein, J.A., 65, 72
Escobar, M., 280
Ettenberger, S., 276

F

Fairbanks, M.M., 156
Farkas, S., 49
Farmer, M., 323
Farr, R.C., 355
Farris, E., 311
Ferguson, M., 44
Ferrara, R.F., 192
Ferrara, S., 385
Feuer, M.J., 371, 374
Fielding, L., 70, 213, 298
Fielding-Barnsley, R., 118, 119
Filby, N.N., 362
Finkelman, K., 320
Finnegan, R.L., 393
Fischel, J.E., 72
Fischer, F., 113
Fisher, C.W., 362
Fisher, P., 143, 144
Fitzgerald, J., 216, 401, 402
Fleisher, L., 168, 179, 180
Fletcher, J., 69, 280
Flexer, R.J., 385
Flink, C., 386
Flom, R., 179
Flood, J., 382
Florida Department of Education, 355
Follansbee, S., 316, 323, 328
Foorman, B.R., 273
Fosnot, C.T., 25
Fountas, I.C., 346, 348*t*, 349, 350, 351, 353
Fox, B., 120
Francis, D.J., 273
Franken, A., 43
Franklin, M.R., 378
Frase, L.T., 190
Freebody, P.A., 140, 293, 314
Freeman, D.E., 402
Freeman, Y.S., 402
Freppon, P., 272, 394
Frick, M.J., 321
Frost, J., 117
Fry, E.B., 346, 349, 350, 353
Frye, B., 275
Fuchs, D., 344
Fuchs, L., 344
Fukkink, R.G., 143

G
Gabbard, R., 319, 321
Galda, L., 76
Gallagher, M., 210, 210*f*, 217, 220
Gallimore, R., 55–56
Gamas, W.S., 214
Gambrell, L.B., 299
Gamoran, A., 399
Gamse, B., 51
Gardner, H., 90
Garner, R., 323, 379, 381
Gartner, A., 269
Gaskins, I.W., 214, 273, 352, 382
Gaunty-Porter, D., 352, 355
Geisel, T., 92
Geva, E., 217
Gilger, J.W., 69
Gillingham, M.G., 323
Gilster, P., 317
Glass, G.V., 214
Glenn, C., 17, 216
Goatley, V.J., 264, 275
Goldberg, L., 27
Goldenberg, C., 55–56
Gomez, E., 276
Gonzalez, N., 51, 56, 58
Gonzalez, R., 58
Goodman, I.F., 69, 74
Goodman, K.S., 43, 44
Gordon, C.J., 215, 216
Goswami, U., 94, 95
Gough, P.B., 274, 352, 359, 362
Graden, J., 269
Graves, B.B., 142
Graves, D., 397
Graves, M.F., 141, 142, 143, 144, 146, 160
Graves, M.H., 217
Gray, D.B., 267
Gray, W.S., 186, 188, 358
Green, B.F., 371, 374
Green, D.S., 378
Green, G., 338, 339
Green, J.L., 21
Greenberg, J.B., 58, 59
Greenberg, R.C., 10
Greenewald, M.J., 216
Greenlee-Moore, M., 323
Greenman, R., 154
Griffin, P., 4, 9, 69, 78, 107, 166, 262, 283, 351, 352, 394
Griffith, P., 115
Grisham, J., 342
Grogan, P.R., 272
Gromoll, E.W., 230
Grossen, B., 94
Guba, E.G., 42*t*
Gury, E., 276
Guthrie, J.T., 89, 211, 212, 275, 363, 382, 383, 384, 388, 394
Guthrie, L.F., 277
Gutlohn, L., 343, 350
Guzzetti, B.J., 214
Gwynne, F., 149

H
Haas, N.S., 407
Hagen, R., 75
Hagood, M.C., 314
Hakuta, K., 69
Haladyna, T.M., 372, 407
Hall, D.P., 91, 96, 98, 275, 356
Halliday, M.A.K., 75
Hamilton, R.L., 197, 231
Hammond, H.K., 144
Hansen, J., 213, 222, 298, 380
Harris, A.J., 265, 268
Harris, J., 320
Harris, T.L., 167
Harrison, T.M., 317
Hart, B., 141, 145
Hass, N.S., 372
Hatcher, P., 125
Hauser, R.M., 264, 370
Hawisher, G.E., 321
Hayes, D.P., 344
Hayes, S., 350
Healy, J.A., 316
Heath, S.B., 52
Hemphill, F.C., 371, 374
Hemphill, L., 69, 74
Herber, H.L., 190
Herman, P., 142, 143, 179, 293
Herrmann, B.A., 277
Hertweck, A., 267
Heubach, K., 179

Heubert, J.P., 264, 370
Hiebert, E.H., 4, 19, 50, 80, 94, 276, 278, 338, 340, 341, 344, 345, 346, 350, 351, 353, 385
Hillinger, M., 320
Hinson, D., 17
Hirsch, E.D., 42*t*, 145
Hite, S., 228
Hocevar, D., 383
Hodges, R.E., 167
Hoff, D.J., 262, 264
Hoffman, J.V., 10, 283, 339, 341, 343, 350
Hoien, T., 70, 73
Holdaway, D., 30, 399
Holland, P.W., 371, 374
Holley, C.D., 217
Hollingsworth, P.M., 166, 382
Horabin, I., 341, 352
Hornik, L.M., 149
Hoskyn, M., 278
Huebach, K., 275
Huey, E., 49
Hughes, B., 316, 328
Hughes, C.A., 381
Hulme, C., 125
Hunter, B., 197
Hurwitz, J., 350
Huxley, A., 343
Hyman, T.S., 356

I

Idol, L., 216
International Reading Association, 1, 92, 274, 278, 311, 351
Invernizzi, M., 71, 72, 277

J

Jawitz, P.B., 299
Jenkins, J., 119, 120, 168, 173, 174, 179, 180
Jenkins, J.R., 269
Jensen, Y., 4, 19, 50, 141, 147
Johnson, B.J., 343, 344, 350
Johnson, C.J., 298
Johnson, D., 213
Johnson, J., 49
Johnston, F., 277, 350
Johnston, P.A., 70
Johnston, P.H., 276
Johnston, P.J., 268
Jonassen, D.H., 25, 322
Jones, A., 4, 19, 50, 141, 147, 150
Jones, B.F., 197
Jones, L.A., 215
Jones, S., 319
Jordan, C., 405
Jordan, H.R., 276
Jordan, L., 267
Jorm, A., 110, 114
Juel, C., 70, 71, 94, 142, 277
Juster, N., 149

K

Kaleba, D., 281
Kalechstein, M., 383
Kalechstein, P.B., 383
Kamii, C., 193
Kamil, M.L., 8, 140, 141, 318, 340, 342
Kanoy, R.C., 383
Karchmer, R., 310, 318, 320, 325
Karweit, N., 269, 278, 393
Katz, P.A., 386
Kavanaugh, J., 267
Kawakami, A.J., 405
Kersthole, M., 123
Khan, S., 51
Kieffer, R., 310, 320
Kilgore, K.L., 265
Kintsch, W., 192, 216, 221, 222
Kinzer, C.K., 311, 315, 316, 317, 325, 363
Kirby, P., 69
Kirk, S.A., 266, 268
Kirkley, J.R., 316
Kirkpatrick, E.A., 140
Kirkpatrick, J.E., 378
Klare, G.R., 141, 340
Klein, R., 323
Klinger, J.K., 227
Knapp, M.S., 272
Knight, S., 275
Korkman, M., 117
Kozloff, M.A., 40*t*
Kozminsky, E., 117
Kozminsky, L., 117
Krasgegor, N., 267
Krashen, S.D., 40*t*, 41*t*

Krol-Sinclair, B., 61–62, 275
Kucan, L., 197, 215, 231
Kuhn, M., 327
Kuhn, M.R., 143, 179
Kulik, C., 316
Kulik, J., 316
Kurita, J.A., 298
Kuspert, P., 117, 118

L
Labbo, L., 310, 318, 323, 325, 326
LaBerge, D., 167, 170, 175, 292
Lacerenza, L., 273
Ladson-Billings, G., 405, 406
Lan, W., 321
Lane, D.M., 333
Lane, S., 384
Lanford, C., 272, 273
Langbien, S., 398
Lange, D.L., 217
Langer, E., 35
Lankshear, C., 44
Lapp, D., 382
Lau, L.B., 72
Lawson, L.L., 272
Lawton, T., 373, 383, 407
Lay, M.M., 321
Lederer, R., 148, 149
Leggitt, D., 190
Leslie, L., 358
LeTendre, M.J., 265
Leu, D.D., 325, 326, 328
Leu, D.J., Jr., 310, 311, 314, 315, 316, 317, 318, 319, 325, 328, 363
Levin, J.R., 222, 297
Levy, B., 180
Lewin, C., 323
Lewis, M., 177
Lewis, T.P., 337, 345, 356
Liberman, I., 113
Light, R.J., 270
Lincoln, Y.S., 42*t*
Lipsky, D.K., 269
Lipson, M.Y., 209, 214, 225, 401
Liu, M., 320, 328
Lively, B., 339
Lloyd, C., 193
Logan, G.D., 167
Lonigan, C.J., 272, 280
Loseby, P.H., 320
Lovett, M., 273
Luke, A., 39, 314
Luke, C., 310
Lundberg, I., 117, 233
Lutkus, A.D., 393
Lyon, G.R., 40*t*, 263, 264, 267, 270
Lyons, C.A., 73, 276, 278
Lysynchuk, L.M., 180, 245, 381

M
Maclean, M., 92
Maclean, R., 110, 114
Madden, N.A., 73, 275
Madrigal, P., 62
Main, D.S., 386
Makuch, R., 280
Mandler, J.M., 216
Mann, V., 115
Manzo, K.K., 262
Marchionini, G., 322
Marion, S.F., 385
Marliave, R., 362
Marrison, D.L., 321
Martin, L.A., 343, 350, 351, 353
Martin, S.M., 225
Marx, H., 117, 118
Mason, J.M., 50, 209, 213, 404
Mastropieri, M.A., 378
Matthews, R., 110
Maxwell, L., 344
Mayer, R.E., 319, 327
Mazzeo, J., 17, 392
McBride, S., 299
McCallister, J.M., 188
McCann, A., 211, 275, 394
McCarthy, S.J., 341, 342, 350
McGill-Franzen, A., 263, 264, 267, 268, 269, 272, 273, 274, 279, 280, 281
McGinley, W.J., 213
McGoldrick, J.A., 298
McHugh, J., 49
McIntyre, E., 272
McKaslin, 140–141, 143
McKee, P., 87
McKenna, M., 310, 323
McKeown, M.G., 140, 141, 143, 146, 151, 152, 156, 160, 196, 230, 231, 293, 294, 340

McKinney, J., 223
McMahon, S.L., 397
McMunn, C., 320
McNeil, J., 221, 222
McQuillan, J., 40*t*
Medo, M.A., 72
Meek, M., 30
Mehan, H., 267
Mehrens, W.A., 379
Meichebaum, D., 215
Meihls, J.L., 267
Meister, C., 223, 227, 245, 300, 381
Meloth, M.S., 246, 246*t*, 247, 248, 249, 252*t*, 302
Melzi, G., 61, 275
Mendro, R.L., 276
Menon, S., 343
Mercer, A.R., 267
Mercer, C.D., 267
Mergendoller, J.R., 272
MetaMetrics, 341, 342
Metsala, J.L., 382
Meyer, A., 310
Meyer, B.J.F., 192, 216
Michalove, B., 63–64
Mikulecky, L., 316
Miller, G.A., 292
Miller, L., 323
Miller, N., 173
Miller, P., 272
Miller, R., 323
Millman, J., 378
Mistretta, J., 12, 276, 303
Moats, L.C., 40*t*, 263, 264, 270
Moje, E.B., 193
Moll, L.C., 51, 56, 58, 403
Monda, L., 179
Moon, J.S., 314
Moore, D.W., 185, 188
Moore, J.E., 366
Moore, P.J., 227
Morais, J., 115
Morgan, S., 120, 121
Morris, D., 277
Morrow, L.M., 50, 75, 216, 272, 276, 382, 394
Mosenthal, P., 140, 141, 340, 342
Moss, A.G., 320
Moustafa, M., 76, 94, 273
Mulhern, M., 59
Murphy, C., 322
Murray, B.A., 76, 112
Muspratt, A., 314

N
Nagy, W.E., 96, 140, 141, 142, 144, 156, 157, 158, 160, 170, 293
National Assessment Government Board, 346, 351
National Assessment of Educational Programs, 261
National Center for Educational Statistics, 311, 324, 393
National Commission on Excellence in Education, 2
National Commission on Teaching and America's Future, 283
National Council for Accreditation of Teacher Education, 329
National Council of Teachers of English, 351
National Reading Panel, 4, 5–6, 8, 19, 21, 91, 110, 126, 129, 166, 167, 174, 175, 224, 270–271, 283, 351
National Research Council, 145
Neff, D., 51, 56, 58
Neilsen, L., 186
Neisser, U., 191
Nesdale, A., 111
Neuman, S., 9, 19, 21, 75, 76, 213, 272, 280
Newell, G., 193
New London Group, 57, 314
New Standards Primary Literacy Committee, 351, 352, 360, 361
New York State United Teachers, 269
Nicholson, T., 126, 293
Nie, H., 115
Nolen, S.B., 372, 407
Nolte, R., 216
North Carolina Public Schools, 342
Nunes, S.R., 110

O
Oakes, J., 399
O'Brien, D.G., 187
O'Connor, E.M., 272
O'Connor, R., 119

Odden, A., 280
Ogbu, J.U., 395, 396
Olofsson, A., 323
Olsen, R.K., 274
Olson, J., 323
Olson, L.S., 263
Olson, M.W., 187
Omanson, R.C., 156, 294, 340
Oosterman, D., 154–155, 160
Oppenheimer, T., 316
O'Shea, D.J., 178
O'Shea, L.J., 178, 179
Ostertag, F., 389
Ostertag, J., 217, 220

P
Page, R.N., 399
Palincsar, A.S., 225, 226, 299, 300, 400
Panel on Educational Technology, 316
Pany, D., 168, 179, 180
Paratore, J.R., 60, 61, 275
Paris, S.G., 71, 214, 225, 373, 383, 407
Parish, P., 350
Parke, C.S., 384
Patberg, J.P., 298
Paul, T., 174
Payne, A.C., 72
Peaget, J., 365
Pearson, P.D., 140, 141, 194, 206, 210, 210*f*, 213, 215, 216, 220, 223, 276, 294, 298, 340, 342, 380
Peha, J.M., 323
Pelligrini, A.D., 50
Peltomaa, A., 117
Pennington, B.F., 69
Perfetti, C.A., 93, 95, 141, 146, 160, 293, 294
Petersen, O., 117
Peterson, B., 346, 350
Peterson, D., 269
Piche, G.H., 217
Pierce, J., 197
Pikulski, J.J., 74, 78, 278, 352, 359, 362
Pillemer, D.B., 270
Pinnell, G.S., 73, 276, 278, 346, 348*t*, 349, 350, 351, 352, 353, 359, 362
Piotrkowski, C.S., 71
Pious, C., 269
Pisha, B., 316, 328
Platt, T., 326
Popham, W.J., 379
Pople, M.T., 156, 294, 340
Poundstone, C.C., 211, 275, 394
Power, M.A., 144
Pratt, A., 276, 279
President's Committee of Advisors on Science and Technology: Panel on Educational Technology, 321
Pressey, S.L.A., 222, 339
Pressley, M., 12, 184, 206, 214, 222, 228, 229, 233, 245, 246*t*, 251, 252, 252*t*, 253, 274, 276, 281, 292, 294, 297, 298, 299, 300, 301, 303, 305, 352, 381, 382, 394
Price, C., 269, 278, 393
Puma, M.J., 269, 278, 393
Purcell-Gates, V., 49, 53–54, 55, 272
Purves, A.C., 372
Putnam, J., 246*t*, 247, 248, 252*t*

R
Rackliffe, G., 246*t*, 248, 249, 252*t*, 302
Rada, R., 319, 321, 322
Randall, S., 17
Rankin, J., 12, 276
Raphael, T.E., 210*f*, 215, 223, 275, 394, 397, 407
Rashotte, C., 179, 274
Rasinski, T.V., 179
Rasmussen, D., 27
Rasmussen, S., 154–155, 160
Ratekin, N., 187
Read, C., 115
Readance, J.E., 188, 189
Reed, W.M., 320, 328
Reich, R., 316
Reinking, D., 186, 310, 314, 318, 319, 326, 328, 329
Reitsma, P., 121, 323
Rendon, P., 58
Repman, J., 321
Reutzel, D.R., 166, 382
Riach, J., 126
Ricciuti, A., 269, 278, 393
Rice, E., 192
Rice, G.E., 216
Richman, B., 153, 342

Rickards, J.P., 222
Rickelman, R.J., 188, 189
Rifkin, J., 316
Riley, J., 190
Rinehart, J., 382, 383
Risko, V.J., 325
Risley, T.R., 141, 145
Rivera, A., 58
Ro, J.M., 10, 339
Robbins, C., 76
Robinson, H., 268
Rochlin, G.I., 316
Rodriguez-Brown, F., 59
Roeber, E., 373
Roehler, L.R., 206, 220, 246, 246*t*, 247, 248, 249, 252*t*, 302
Roettger, D., 93
Roose, G.E., 321
Roper/Schneider, D., 94
Rose, D.H., 310
Rosemary, C.A., 71
Rosenshine, B., 223, 227, 245, 300, 381
Roskos, K., 75, 76
Ross, S.M., 73
Rossing, R.L., 216
Roszak, T., 316
Roth, E., 117, 118
Roth, J., 373, 383, 407
Rothkopf, E.Z., 190
Rothstein, R., 262, 282
Routh, D., 120
Rowan, B., 277
Rowling, J.K., 341
Rubin, D.L., 193
Ruddell, M.R., 6
Ruddell, R.B., 6
Rumelhart, D.E., 191
Russell, D., 18, 19, 21
Russell, M., 326
Ryan, J.M., 379
Rycik, J.A., 185
Ryder, R.J., 143

S
Sachar, L., 149
Sack, J., 264
Sacks, C.H., 272
Sadoski, M., 299
St. Pierre, R., 51
Salisbury, R., 189
Samuels, S.J., 140, 167, 170, 173, 175, 176, 177, 179, 217, 292, 400
Sanders, P.L., 190, 191
Sandora, C., 230
Santa, C., 70, 73
Satlow, E., 389
Savery, J.R., 26, 28, 36
Scanlon, D.M., 274
Scarborough, H.S., 50, 69
Scharer, P.L., 272
Scheu, J.A., 394
Schneider, W., 94, 117, 118
Schreiber, P.A., 179
Schreuder, R., 123
Schuder, T., 214, 228, 229, 246*t*, 251, 252, 252*t*, 253, 301, 352
Schumaker, J.B., 381
Schunk, D.H., 89, 90
Schuster, B.V., 110
Schwandt, T., 26, 393
Schwartz, S., 380
Schweinhart, L.J., 72, 272
Scott, J.A., 4, 19, 50, 141, 147, 150, 151, 156, 157, 158, 160, 338, 340
Scruggs, T.E., 378
Seifert-Kessel, N., 215
Seltzer, M., 276, 278
Semonick, M., 177
Sendak, M., 146
Shablak, S.L., 191
Shanahan, T., 9, 15, 19, 21, 59, 110, 277
Shankweiler, D., 113
Shannon, P., 39
Share, D., 114
Share, S., 110
Shaywitz, B.A., 69, 273, 280
Shaywitz, S.E., 17, 69, 273, 280
Shearer, B., 275
Shepard, L.A., 385
Shirey, L., 213
Shockley, B., 63–64
Short, R., 275
Siedenburg, J., 71
Siegel, L., 265
Sigmon, C.M., 96
Silven, M., 215
Simons, H., 340
Simpson, M., 187

Simpson, R.G., 189
Sindelar, P.T., 178, 179, 265
Singer, H., 6, 18, 19, 21, 216, 223
Sipay, E.R., 265, 268, 276, 279
Sivan, E., 246*t*, 248, 249, 252*t*, 302
Six, L., 389
Skobel, B., 4, 19, 50, 141, 147, 150
Slater, W.H., 141, 142, 217
Slavin, R.E., 71, 73, 275, 277
Slocum, T., 119
Slonim, M., 145
Small, S.G., 276, 279
Smith, A.E., 191
Smith, D., 341, 352
Smith, F., 27
Smith, J.K., 272, 382, 394
Smith, K., 10
Smith, L., 73, 323
Smith, M., 245, 341, 352, 382, 394
Smith, M.L., 372, 385
Smith, M.W., 76, 272
Snow, C.E., 4, 9, 69, 74, 78, 107, 166, 262, 283, 351, 352, 401, 403
Snyder, T.E., 214
Sowell, J., 144
Spache, G.D., 345, 349
Sparling, J.J., 72
Spear-Swerling, L., 268
Spiegel, D.L., 216
Spindler, G., 404
Spindler, L., 404
Spring, J., 43
Stahl, K.A.D., 289, 316
Stahl, S.A., 76, 91, 112, 142, 143, 146, 156, 179, 272, 275, 277, 328
Stallings, J., 19, 275
Stanovich, K.E., 70, 76, 172, 265
Stauffer, R.B., 213
Steenwyk, F.L., 221, 299
Stein, M., 173, 174, 343, 344, 350
Stein, N., 17, 216
Stenner, A.J., 341, 352
Stephen, T., 317
Sternberg, R.J., 141, 142, 143, 268, 305
Stewart, O., 192
Stewart, R.A., 187
Stoll, C., 316
Stone, C.A., 384
Strait, J., 72
Strickland, D.S., 76, 78, 79, 81, 355
Stringfield, S., 69
Su, Y.F., 179
Suess, Dr., 92
Sugrue, B., 383
Sulzby, E., 77
Sutherland, J., 48
Swanson, H.L., 278
Sweet, R.W., 262
Symons, S., 298

T
Tam, A., 62
Tan, A., 293
Tangel, D., 123, 124
Tanner, M.L., 197, 198
Tao, F., 51
Tarr, H., 51
Taylor, B., 72, 192, 217, 275, 276
Taylor, D., 8, 44, 52, 53, 267
Teale, W., 53, 325
Teddlie, C., 69
Tei, E., 192
Tenery, M.F., 58
Terman, L.M., 141
Texas Education Agency, 341
Thompson, W., 269, 278, 393
Thorndike, E.L., 20, 140
Thurlow, M.L., 269
Thurlow, R., 167
Thurow, L.C., 43
Tierney, R.J., 320
Tolfa-Veit, 378
Topping, K., 174, 310
Torgesen, J., 120, 121, 179, 274
Tracey, D., 276
Trathen, W., 211
Treiman, R., 113, 292
Troia, G.A., 133, 134*f*, 273
Tunmer, W., 111
Turbill, J., 29
Turner, J.C., 373, 383, 407

U
Uhry, J., 112
U.S. Census Bureau, 353
U.S. Congress, 319, 328
U.S. Department of Education, 325, 329, 337, 353

V
Vacca, J.L., 192, 196
Vacca, R.T., 185, 187, 190, 191, 192, 196, 200
Vaden-Kiernan, M., 269, 278, 393
Valdés, G., 49, 54–55, 401, 402–403
Valencia, S.W., 406
Van Bon, W., 123
Van den Broek, P., 167
Van Dijk, T.A., 216, 221, 222, 273
VanIJzendoorn, M.H., 50, 110, 129
Van Meter, P., 229, 246*t*, 251, 252, 252*t*, 253, 275, 301, 394
Vaughn, S., 227
Vaurus, M., 215
Vavrus, L.G., 246*t*, 247, 248, 252*t*
Vélez-Ibanez, C.G., 58
Vellutino, F.R., 274, 275, 276, 278, 279
Venezky, R.L., 76, 110, 268, 275
Viorst, J., 149
Vise, M., 117, 118
Voelk, K.E., 17, 392
Vogler, G.P., 69
Vye, N.J., 381
Vygotsky, L.S., 292

W
Waggoner, D., 17
Wagner, M., 263
Wagner, R., 274
Wagoner, S.A., 400
Waid, L.R., 383
Walberg, H.J., 10
Walker, W.E., 383
Walmsley, S.A., 78, 271, 275, 279
Walp, T., 275
Walpole, S., 276
Warschauer, M., 310
Wasik, B.A., 71, 73, 74, 78, 275, 277
Watts, S.M., 143
Weikart, D.P., 72, 272
Weiss, M.J., 75
Weller, H.G., 321
Wells, J., 4, 19, 50, 141, 147
Wenrich, J.K., 141
Wesseling, R., 121
Whalin, K., 320
Wharton-McDonald, R., 12, 233, 276, 303
Whipple, G.M., 186
White, S., 144
White, T.G., 141, 142, 144
Whitehurst, G.J., 72, 272, 280
Wigfield, A., 89, 211, 212, 275, 382, 384, 394
Wilce, L., 123, 125
Wilkinson, I.A.G., 4, 19, 50, 213, 338, 340
Williams, J., 122, 123
Willows, D.M., 110
Wilson, P.T., 70
Wilson, R.A., 39, 43, 397
Winfield, L., 265
Winograd, P., 340
Wise, B., 323
Wise, B.W., 274
Wite, E.B., 341
Wixson, K.K., 93, 209, 352, 359, 362, 401
Wolfe, M.F., 344
Wolfer, L.T., 344
Wonnacott, C.A., 215, 223
Wood, J.M., 310
Wood, K.D., 380
Woodside-Jiron, H., 94, 271
Worthy, J., 230
Wysocki, K., 173, 174

Y
Yaden, D.B., 62
Yaghoub-Zadeh, Z., 110
Yanagihara, A., 144
Yen, W., 385
Yokoi, L., 12, 274, 276
Yopp, R.E., 223
Young, A.J., 385
Young, J.P., 17
Ysseldyke, J.E., 269

Z
Zabroske, B., 144
Zemelman, S., 39, 40*t*, 43
Zhang, Y., 115
Zigmond, N., 269, 278
Zimmerman, B.J., 89, 90

Subject Index

Note: Page numbers followed by *f* indicate figures; those followed by *t* indicate tables.

A

ABDs program, 122–123
Abecedarian Project, 272
acceleration designs, 275–278
achievement standards: relative vs. absolute, 261–262
achievement tests. *See* standardized testing
acting, 396
activity setting, 55–56
add-on instructional programs: for reading/learning disability, 276
adept diction: word consciousness and, 145–147
adolescents: content area reading and, 184–201. *See also* content area reading; literacy needs of, 184–186
alphabet: in early intervention programs, 76
alphabet books, 149
analogy: in decoding, 94–95
anxiety: in high-stakes testing, 383–384
application: in constructivist instruction, 37
assessment: portfolio, 408–409; standardized testing in. *See* standardized testing
attention: in reading, 169
authenticity: in constructivist instruction, 38

B

Becoming a Nation of Readers: The Report of the Commission on Reading, 4–6, 340
bilingual education, 401–402
blind instruction, 194
Book Buddies, 72
book loan programs, 62–63
Book Raps, 313
Bush, George W., 8

C

California: text difficulty standards in, 340–341, 353–357, 354*t*, 360
census-based approach, 278–279, 281–282
Center for the Improvement of Early Reading Achievement, 9
Cinco de Mayo, 313
class. *See* socioeconomic status
classroom corrective reading, 275–276
classroom literacy: for parents, 62
class size, 273
cliches: play with, 149

Clinton, Bill, 8

cognitive clarity, 88–89

cognitive conflict: fostering of, 36–37

cognitive paradigm, 191–193

collaborative groups, 29

Collaborative Strategic Reading, 227

Commission on Adolescent Literacy, 185–186

comprehension, 169, 170, 205–236; complexity of, 231–232; content area reading and, 382–383; cooperative learning and, 224; decoding and, 292–294; evaluation in, 296; fluency and, 167–168, 169–171, 292–294, 297; individual nature of, 232; inferences in, 295; interpretation in, 296; intrareading processes in, 295–296; letter- and word-level processes in, 292–294; mental imagery and, 299; metacognitive processes and, 294–298, 304–306; monitoring in, 224, 296–297; motivation and, 211–212; nonlinear reading and, 232; postreading processes in, 297; prediction and, 205, 208–211, 212–214; prereading processes in, 294–295; prior knowledge activation and, 212–214, 294–295, 298–299; promotion of. *See* comprehension instruction; questions/questioning and, 222–224, 229, 381; reading frequency and, 382; rereading and, 295, 297; research directions for, 231–234; self-explanation and, 381; self-monitoring and, 381, 400; self-questioning and, 381; self-regulated, 291–306; by skilled readers, 294–298, 304–305; strategies for, 205–206, 210, 212–224, 243–254, 293–298; summarization and, 220–222, 299; text structure and, 216–218; think-alouds and, 214–216; visual display and, 218–220, 218*f*; vocabulary and, 224, 293–294

comprehension instruction, 243–244; balanced, 207–212; checklist for, 235*f*; components of, 208–211, 210*f*; comprehension routines in, 224–231; content instruction in, 254; curriculum for, 212–231; Direct Explanation approach in, 245–249; direct instruction model of, 243; guided practice in, 243; in high-stakes testing, 380–383; inclusion of in curriculum, 233–234; lack of, 233–234, 303; long-term effects of, 243–244, 256–257; model of, 208–211, 210*f*; motivational strategies in, 211–212; ongoing assessment in, 212; Questioning the Author strategy in, 196–197, 230–231, 230*f*; reciprocal teaching in, 225–227, 299–300, 400; release of responsibility in, 210–211, 210*f*; research directions for, 231–234; SAIL program in, 214–215, 228–229, 229*f*, 251–252; strategy instruction in, 212–224, 243–254, 298–303; for struggling readers, 400; supportive classroom context for, 207–208; teacher modeling in, 214–215; teacher preparation for, 244–258; text selection for, 211; Transactional Strategy Instruction in, 228–229, 229*f*, 234, 246*t*, 249–252, 253, 300–302; transfer effects in, 216, 220, 256–257; unanswered questions about, 256–257

comprehension monitoring, 224, 296–297

comprehension routines, 224–231

Comprehensive Test of Basic Skills (CTBS), 357–359, 359*t*

computers. *See* Internet resources; new literacies

concept mapping, 381

conflict frame, 220

consonant plane, 93–94

consonants: stop, 112

constructivism, 25–45, 193; authenticity and, 38; communication of expectations and, 31–32; in content area reading instruction, 193; contextualized learning and, 35;

definition of, 26, 393; engagement and, 27–29, 31–32; explicit teaching and, 33–34; ideological positions on, 39–44, 40*t*–42*t;* instructional methods and, 32–35, 33*f;* instructional principles of, 30–38; vs. instructivism, 39–44, 40*t*–42*t;* intellectual unrest and, 36–37; learner goals and, 27–28; learning context and, 26–27; metatextual awareness and, 37–38; mindful learning and, 35; vs. objectivism, 39–44, 40*t*–42*t;* research on, 39–44, 40*t*–42*t;* socially constructed meaning and, 29–30; student diversity and, 393–394; systematic teaching and, 33–34; theoretical basis of, 26–30

content area reading, 184–201, 382–383; blind instruction in, 194; cognition and learning paradigm for, 191–193; comprehension and, 382–383; direct instructional approach in, 189, 194–195; evolution of, 187–193; functional instructional approach in, 189, 195–200; high-stakes testing and, 382–383; instructional framework and, 196; invisible aspects of, 184, 195–200; locus of instruction and, 189; minilessons in, 194–195; necessary skills for, 188–200; overview of, 184–187; postreading discussion and, 197–200; rationale for, 186–187; reading and skills paradigm for, 188–191; resistance to, 186–187; scaffolding in, 196; schema theory and, 191; social constructivist paradigm for, 193; Socratic seminar and, 197–200; strategic learning in, 194–197; study skills and, 188–191; text structure and, 192; transfer effects in, 189; visible aspects of, 184, 193–195; writing activities for, 199–200

context clues: in vocabulary instruction, 143–144, 159

contextualized learning, 33*f*, 35

continuants, 112

cooperative learning: comprehension and, 224

correlational research, 11

Cox, Cheryl, 313

critical word factor, 345–346, 362

cross-cultural understanding: new literacies of, 313, 315

cultural factors: in parental involvement, 52–65; *See also* students of diverse backgrounds

culturally relevant pedagogy, 406

culturally responsive instruction, 404–406

D

decodability: text difficulty and, 343–345

decodable texts, 27; in phonics instruction, 94

decoding, 94–96, 169; by beginning vs. fluent readers, 169–171; comprehension and, 292–294; fluency and, 167, 168–169, 172–175, 292–294; morphemes in, 95–96; onset in, 95, 273; pattern and analogy in, 94–96; practice in, 172–175; rimes in, 95, 273; sequential, 93–94; stages of, 171; visual unit size and, 170–171, 173

deixis, 319

demonstration: constructivist view of, 27–29

descriptive research, 10–12

Developmental Reading Assessment (DRA), 350, 358, 361

diction: word consciousness and, 145–147

dictionaries: in vocabulary instruction, 144

Directed Reading-Thinking Activity, 225

Direct Explanation approach, 245–249, 246*t;* vs. Transactional Strategy Instruction, 249–250

discussion/reflection: in constructivist instruction, 36–37
disequilibrium: intellectual, 36–37
diversity. *See* students of diverse backgrounds
Duby, Marjoie, 311–312
dyslexia. *See* reading/learning disability

E

early intervention programs, 69–84; curriculum components of, 75–77; documentation and assessment in, 80, 82; family involvement in, 70–71, 81; implementation of, 74–75, 78–79; in-class vs. pull-out, 77–79, 82; instructional strategies for, 79–80, 81; integration of, 77–78, 82; long-term benefits of, 272–273; needed research on, 82–83; organization and coordination of, 78–79; prekindergarten/kindergarten, 72, 272–273; primary grade, 72–73; professional development and, 81–82, 83; rationale for, 70; scaffolding in, 80; schoolwide, 73, 82–83; skills emphasis vs. meaning emphasis in, 272
Early Reading Intervention, 72
educational policy: trends in, 3–6; *See also* government involvement
Education for all Handicapped Children Act of 1975, 263
elementary early intervention programs, 72–73
Emergent Literacy Intervention, 72
engagement: in constructivist instruction, 27–29, 31–32; learning and, 89–90; text difficulty and, 343, 363
English language learners: teaching strategies for, 401–403
ESL instruction: phonemes in, 114
evaluation: in constructivist instruction, 37
Even Start Family Literacy Program, 71
evidence-based instruction, 2
experimental research, 11
explicit teaching, 33–34, 33*f*; for reading/learning disabled, 278

F

family literacy programs, 59–64, 70–71
family storybook reading: school success and, 49–51, 53, 56, 57, 61–64
family-teacher partnerships, 59–64. *See also* parental involvement
federal government. *See* government involvement
First Steps, 73
Florida: text difficulty standards in, 355–357
Florida Comprehensive Assessment Test, 358, 359, 359*t*
fluency, 166–181; barriers to, 168–171; comprehension and, 167–168, 169–171, 292–294, 297; concepts of, 167–168; decoding and, 167, 168–169, 172–175, 293–294; definition of, 167; indicators of, 179, 180–181; practice and, 172–175; properties of, 167; reading frequency and, 172–175; repeated reading and, 175–180; single-word, 179–180; sustained silent reading and, 174–175; transfer effects and, 179; visual unit size and, 170–171, 173; word recognition and, 167, 171, 292–294
Four Blocks, 96–97, 275
frames: comprehension and, 220
Frosty Readers, 312, 312*f*

G

GIST procedure, 221–222

Goals 2000: Educate America Act, 353

good readers: characteristics of, 205–206

government involvement: in new literacies, 317, 329–330; in reading/learning disability interventions, 261–262, 263–264, 282; in standards and testing, 3; in text difficulty standards, 351–357, 354*t*; trends in, 3–6

grade-appropriate text, 337–365. *See also* text difficulty

grade retention: rates of, 370–371

graduation: high-stakes testing for, 371

graphemes, 110–111

guided reading, 96–97, 346

H

Handbook of Reading Research (Pearson et al.), 340

Head Start, 72

highly decodable texts: in phonics instruction, 94

High Scope studies, 72, 272

high-stakes testing, 370–389; administrators' reactions to, 372, 373; anxiety reduction for, 383–384; applications of, 370–371; background knowledge and, 380; characteristics of, 370–372; comprehension strategies for, 380–383; curriculum incoherence and, 385–386; curriculum narrowing for, 385; definition of, 370; engaged reading and, 377, 382–383, 384; format practice for, 377, 378–379, 384–385; graduation requirements and, 371; guided instruction for, 376; information search and retrieval in, 381; for instruction improvement, 371–372; motivational aspects of, 375, 377, 383–384, 388; performance assessments in, 372; performance components in, 374–376, 374*f*; performance orientation and, 386–387; performance- vs. learning-oriented instruction and, 386–387; preparation for, 376–387, 376*f*; promotion and, 370–371; reading strategies for, 380–381; retention rates and, 370–371; school takeovers and, 371; self-efficacy and, 388; self-monitoring in, 381; strategy instruction for, 376–377, 379–382; student diversity and, 406–409; students' reactions to, 373–374, 383–384; teachers' reactions to, 372–373; teaching objectives and, 387; testing vs. instructional objectives and, 387; tests used in, 371–372; test-wiseness and, 375, 378–379; time allocation for, 377–378, 387–388; in tracking, 371; validity of, 372–373

Hobart-Malang Electronic Mail Project, 313

Home Instruction Program for Preschool Youngsters (HIPPY), 71

home-school partnerships: for low-income families, 56–65; *See also* parental involvement

homographs, 148

homophones, 148

household funds of knowledge, 51–56, 58–59

hypermedia texts. *See* new literacies

I–J

idioms: play with, 148–149

illustrations: comprehension and, 218–220, 218*f* imagery: comprehension and, 299

immersion: constructivist view of, 27–29

implicit teaching, 33–34, 33*f*

information and computer technology: impact of, 310–330; *See also* new literacies

Informed Strategies for Learning, 214–215, 225

instruction: *See* reading instruction; teaching

instructional framework, 196

instructivism: vs. constructivism, 39–44, 40*t*–42*t*

integrated curricula. *See* content area reading

integrated learning systems, 323–324

intellectual unrest: fostering of, 36–37

intergenerational programs, 59–64. *See also* parental involvement

International Phonetic Alphabet, 110, 139

International Reading Association: Commission on Adolescent Literacy, 185–186; electronic journal of, 311; Miss Rumphius Award of, 311

Internet resources, 310–330; availability of, 311, 324; utilization and applications of, 324–325; *See also* new literacies

invented spelling, 97

Jobe, Hazel, 313

journals: in content area reading, 199; *See also* writing

K

Kamehameha Early Education Program, 73, 275, 382

kindergarten: early intervention programs in, 72, 272–273. *See also* early intervention programs; phonemic awareness instruction in, 116–119; skills emphasis vs. meaning emphasis in, 272

Knox, Patricia, 312

L

Lauer, Tim, 313

learning: cognitive clarity and, 88–89; contextualized vs. decontextualized, 33*f*, 35; engagement and, 89–90; mindful vs. mindless, 33*f*, 35; motivation and, 89–90; multifaceted/multilevel instruction and, 90–91; reading and, 186–187. *See also* content area reading; self-confidence and, 89; strategic, 192, 194–197

learning disability. *See* reading/learning disability

learning oriented teachers: vs. performance-oriented teachers, 386–387

learning styles, 90–91

LeLong, Peter, 313

letters: in phoneme awareness instruction, 119–120, 123–124

Lexiles, 341–342, 363

literacy: barriers to, 69; early intervention for: *See* early intervention; *See also* reading

literacy activities: in daily life, 52–56

literacy instruction: for parents, 59–64

literacy learning: adolescent, 184–186. *See also* content area reading; parental involvement in, 48–65

locus of instruction: content area reading and, 189

low-income families. *See* socioeconomic status
Lundberg program, 117–119

M

Making Words, 98–101, 399–400
McGhee, Cherrol, 313
memorable texts, 30
mental imagery: comprehension and, 299
metacognition, 192, 291–306; comprehension and, 294–298; definition of, 291; here-and-now, 291; long-term, 291–292; by skilled readers, 294–298, 304–305; by teachers, 305–306
metatextual awareness, 37–38
mindful learning, 33*f*, 35
Miss Rumphius Award, 311
moral education, 54
morphemes, 95–96; in decoding, 96
motivation: comprehension and, 211–212; in high-stakes testing, 375, 377, 383–384, 388; learning and, 89–90; self-confidence and, 89; for students of diverse backgrounds, 395–396
multilevel learning activities, 90–91
multiple criterion texts, 94
multiple intelligences, 90–91

N–O

National Assessment of Educational Progress (NAEP), 13, 261–262, 264, 346, 359, 392
National Institute of Child Health and Human Development, 9, 263
National Reading Panel (NRP), 4–6, 166, 174, 175; phonemic awareness instruction meta-analysis by, 126–135, 133*f*, 134*f*; research standards of, 21–22; text difficulty and, 351–352
National Research Council, 9
A Nation at Risk: The Imperative for Educational Reform (NCEE), 2–3, 4
Nation's Report Card, 392
new literacies, 310–330; analysis and evaluation of, 316–319, 325–326; characteristics of, 313–315; common patterns in, 319–322; concerns about, 315–317; continuous change in, 313–314, 319, 326–327; critical evaluation of, 314; cultural aspects of, 313, 315, 327; definition of, 313–314; deictic aspects of, 319; early adopters of, 320; effectiveness of, 316, 321–322; examples of, 311–313; government support for, 317, 329–330; integrated learning systems and, 323–324; Internet and, 311, 324–325; open vs. closed tasks and, 322; project-based learning experiences and, 311–312; resistance to, 318; social aspects of, 314–315, 327–328; staff development in, 325; strategic knowledge and, 314, 327; student/teacher enthusiasm for, 319–320, 328–329; talking storybooks and, 322–323; teacher's role in, 324–325, 329; traditional literacies and, 315, 317, 327; travel-buddy projects and, 312; utilization of, 324–325, 329; of video conferencing, 313
New Standards Project, 352–353, 361

objectivism: vs. constructivism, 39–44, 40*t*–42*t*
onset: in decoding, 95, 273

P

paraprofessional tutors, 278

parental involvement, 48–65; activity settings and, 55–56; class and cultural differences and, 52–65; classroom literacy and, 62; household funds of knowledge and, 51–56, 58–59; literacy training for, 59–64; literate traditions and, 52; multiliteracies and, 57–58; parent-teacher reciprocity in, 58–64; Project Flame and, 59–60; in reading/learning disability interventions, 275; storybook reading and, 49–51, 53, 56, 57

parent-teacher partnerships, 59–64

performance assessments: in high-stakes testing, 372, 374–376, 374*f*. *See also* high-stakes testing

performance-oriented teachers: vs. learning-oriented teachers, 386–387

Perry Preschool Project, 72

phoneme(s), 110–112; definition of, 113; graphemes and, 110–111; identification of, 111–112; International Phonetic Alphabet of, 110–112, 139; list of, 139; vs. phones, 113–114; symbols for, 110, 139

phoneme blending, 112, 120–122

phoneme categorization, 111

phoneme deletion, 112

phoneme discrimination, 113

phoneme identity, 111

phoneme isolation, 111

phoneme segmentation, 112, 119, 120–123

phonemic awareness, 92–93, 110–136; assessment of, 111–112; definition of, 110, 111; in early intervention programs, 76; in ESL instruction, 114; overview of, 110–112; vs. phoneme discrimination, 113; vs. phonological awareness, 113; reading ability and, 114–115; vocabulary acquisition and, 158

phonemic awareness instruction, 115–135; ABDs program in, 122–123; alternative methods of, 119–123; beginning reading instruction and, 124–126; blending in, 112, 120–122; letter manipulation in, 119–120; letters in, 123–124; literacy acquisition and, 124–125; long-term effects of, 119; Lundberg program in, 117–119; meta-analysis of, 125–135; in preschool and kindergarten, 116–119; Reading Recovery program in, 125–126; say-it-and-move-it in, 123–124; segmentation in, 119, 120–123; Sound Foundations program in, 118–119; sound manipulation in, 119; studies of, 115–135; whole language approach and, 126

phones, 113–114

phonics instruction, 87–107; cognitive clarity and, 88–89; decodable texts in, 94; decoding strategies in, 94–96; effectiveness of, 91–92; engagement in, 89–90; in Four Block program, 96–97; invented spelling in, 97; Making Words in, 98–101; multifaceted/multilevel, 90–91, 98–101; multiple criterion texts for, 94; phonemic awareness and, 92–93; Reading/Writing Rhymes in, 103–106; research-based, 96–106; rhyming words in, 100–106; sequential decoding and, 93–94; synthetic, 93–94; systematic vs. nonsystematic, 33–34, 33*f*, 91–92; time devoted to, 96–97; types of, 91–92; Using Works You Know in, 101–103

phonological awareness, 113, 273–275
pictures: comprehension and, 218–220, 218*f*
pocket chart, 98–99
policy reports, 4–6
political factors: in research applications, 20–21; *See also* government involvement
polysemy, 157, 158–159
portfolio assessment: for students of diverse backgrounds, 408–409
poverty. *See* socioeconomic status
prediction: comprehension and, 205, 208–211, 212–214
prefixes: in vocabulary instruction, 144
preschool/prekindergarten: early intervention programs in, 72, 272–273. *See also* early intervention programs; phonemic awareness instruction in, 116–119
Preventing Reading Difficulties in Young Children (U.S. National Research Council), 4, 351–352
preventive programs: *See* early intervention programs
primary grade early intervention programs, 72–73. *See also* early intervention programs
principles of engagement, 28
print awareness: in early intervention programs, 75–76
prior knowledge activation: comprehension and, 212–214, 294–295, 298–299
professional development: for early intervention programs, 81–82
project-based learning experiences, 311–312
Project Flame, 59–60
promotion: high-stakes testing and, 370–371
promotional gates, 265
public education: negative attitudes toward, 2–3
public opinion: on education and educators, 2–3
public policy. *See* government involvement
puns, 148–149
puzzlement: fostering of, 36–37

Q

QARs (Question-Answer-Relationships), 223
Qualitative Reading Inventory (QRI), 358
Questioning the Author (QtA) strategy, 196–197, 230–231, 230*f*
questions/questioning: comprehension and, 222–224, 299, 381

R

readability formulas, 338, 339–342, 349; Lexile system for, 341–342, 363; problems with, 340–341, 342
reading: attention in, 169; beginning vs. fluent, 168–171; content area, 184–201. *See also* content area reading; decoding in, 94–96, 168–169. *See also* decoding; guided, 96–97, 346; learning and, 186–187. *See also* content area reading; letter-by-letter processing in, 170; metacognition in, 192; nonlinear, 232; processes in, 168–171; repeated, 175–180, 400; schemata in, 191; storybook, 49–51, 53, 56, 57, 61–64, 76; strategic learning in, 192; sustained silent, 174–175; tape-assisted, 177; text structure and, 192; visual unit size in, 170–171; *See also* literacy

reading ability: phonemic awareness and, 114–115

reading achievement: grade level and, 261–262; relative vs. absolute achievement standards for, 261–262

reading and skills paradigm: for content area reading, 188–191

reading comprehension. *See* comprehension

Reading Excellence Act, 8, 342

reading fluency. *See* fluency

Reading Forecaster Technique, 209

reading frequency/amount: comprehension and, 382; for high-stakes testing, 384

reading instruction: debates over, 8; phonemic awareness instruction and, 124–126; research-based, 12. *See also* research-based instruction; research-proven, 12–13; research-related, 12; *See also* teaching

reading/learning disability, 261–283; clinical definitions of, 265–267; criteria for, 265–267; grade level definitions and, 261; identification of, 265–270; prevalence of, 262–263, 264; program evaluation for, 269–270; reconceptualization of, 279–280; redefinition of, 263–264; relative vs. absolute achievement standards and, 261–262; remedial services vs. special education for, 263–264; socioeconomic aspects of, 263, 267–268

reading/learning disability interventions, 269–282; acceleration, 275–278, 281; add-on instructional programs, 276; census-based approach to, 278–279, 281–282; class size reduction as, 273, 281; comprehensive literacy instructional plan, 280–282; failure of, 269–270; family programs in, 275; federal/state guidelines and funding for, 261–262, 263–264, 282; fragmentation in, 282; longer term support in, 271, 278–279, 281–282; phonological awareness, 273–275; in preschool/kindergarten, 272–273, 280–281; preventive, 271–275, 280–281; redesign of, 279–283; research on, 270–279; short-term nature of, 279; tutoring as, 276–277; very small group instruction, 277–278

Reading Online (IRA), 311

reading readiness: phonemic awareness and, 114–115

Reading Recovery, 9, 73, 277, 346, 353, 358; phonemic awareness and, 125–126

reading research. *See* research

Reading Research Center, 190

Reading Research Quarterly, 9

reading speed: standardized tests and, 358–359

The Reading Teacher, 14

reading tests: standardized. *See* standardized testing

reading wars, 8

Reading/Writing Rhymes, 103–106

reciprocal teaching, 214–215, 400; in comprehension instruction, 225–227, 299–300

Recommended Readings in Literature (California Department of Education), 360, 361

reflection: in constructivist instruction, 32, 36–37

remedial reading programs: vs. special education, 263–264; *See also* reading/learning disability interventions

repeated reading, 175–180, 400

rereading, 295, 297; as test strategy, 381

RESEARCH-BASED INSTRUCTION, 8–22, 12; adoption of, 20; definition of, 12; vs. research-related instruction, 12; selling of, 10
RESEARCHED-BASED PROGRAMS, 8
RESEARCH-PROVEN INSTRUCTION, 12–13
RESEARCH-RELATED INSTRUCTION, 12
RESEARCH/RESEARCH STUDIES: analysis of, 8–22, 14–16; vs. anecdotal evidence, 14; application of, 9–10, 17–22; cognitive paradigm in, 191–193; collections of, 21; comparison of, 21; components of, 16; correlational, 11; data collection and analysis in, 14; definition of, 10, 14; descriptive, 10–12; duration of, 19; empirical basis of, 14–16; experimental, 11; meta-analysis of, 21; methodological errors in, 18–19; National Reading Panel standards for, 21–22; skills paradigm in, 188–191; social constructivist paradigm in, 193; sociopolitical influences on, 20–21; types of, 10–12; utility of, 13–16; value of, 15
RETENTION RATES, 370–371
RHYME: in phonics instruction, 100–106
RIMES: in decoding, 95, 273
Rohloff, Beth, 313
RTEACHER LISTSERV, 311

S
SAIL PROGRAM, 214–215, 228–230, 229*f*, 251–252
SAY-IT-AND-MOVE-IT: in phoneme awareness instruction, 124
SCAFFOLDING: in comprehension instruction, 225–227; in content area reading, 196; in early intervention programs, 80; in vocabulary instruction, 80
SCHEMATA: in content area reading, 191
SCHOOL TAKEOVERS, 371
SCHOOLWIDE EARLY INTERVENTION PROGRAMS, 73
SELF-CONFIDENCE: motivation and, 89
SELF-EXPLANATION: comprehension and, 381
SELF-MONITORING: comprehension and, 381, 400
SELF-QUESTIONING: comprehension and, 381
SELF-SELECTED READING: in Four Block program, 96–97
SEMANTIC MAP: comprehension and, 219–220, 219*f*
SEQUENTIAL DECODING, 93–94
Silverman, Susan, 312
SINGLE-WORD FLUENCY, 179–180
SKILLED READERS: comprehension strategies of, 294–298, 304–305
SKILLS PARADIGM, 188–191
SKIMMING, 294–295
SMALL GROUP INSTRUCTION: for reading/learning disability, 277–278
SOCIAL CONSTRUCTIVIST PARADIGM, 193. *See also* constructivism
SOCIOECONOMIC STATUS: Internet access and, 311, 324; new literacies and, 314–315, 327–328; parental involvement and, 52–65
Socratic Seminar, 197–200
Sound Foundations, 118–119
SPECIAL EDUCATION: vs. reading remediation, 263–264
SPELLING: invented, 97; phonemic awareness instruction and, 124–125

staff development: for new literacies, 325
Standard Achievement Test (SAT), 357, 359*t*
standardized testing: grade-appropriate text for, 337–365. *See also* text difficulty; high-stakes, 370–389. *See also* high-stakes testing; readability formulas for, 338; reading speed and, 358–359; student diversity and, 406–409; technology in, 326–327
state guidelines: for reading/learning disability interventions, 282; for text difficulty, 340–341, 353–357, 354*t*; *See also* government involvement
stop consonants, 112
storybook reading: in early intervention programs, 76; family, 49–51, 53, 56, 57, 61–64; school success and, 49–51, 53, 56, 57, 61–64
storybooks: talking, 322–323
story map: comprehension and, 216
strategic learning, 192; in content area reading, 194–197; instruction in, 194–195
Strategies for Learning, 214–215
student journals: in content area reading, 199; *See also* writing
Students Achieving Idependent Learning (SAIL), 214–215, 228–230, 229*f*, 251–252
students of diverse backgrounds, 392–410; ability grouping and tracking for, 399; acting by, 396; assessment tools for, 406–409; classroom management and, 396; constructivist approaches for, 393–394; culturally responsive instruction for, 404–406; as English language learners, 401–403; increasing numbers of, 393; literature-based approaches for, 393–394; modeling for, 397; motivational strategies for, 394–398; ownership of literacy by, 398; reading achievement of, 392–393; teaching strategies for, 398–401
study skills: content area reading and, 188–191
Success for All, 73, 268, 275
suffixes: in vocabulary instruction, 144
summarization: comprehension and, 220–222, 299
sustained silent reading, 174–175
synthetic phonics instruction, 93–94
systematic teaching, 33*f*, 34–35

T–U

talking storybooks, 322–323
tape-assisted reading, 177
teacher(s): knowledge base for, 2; negative attitudes toward, 2–3
teacher expectations: communication of, 31–32
teacher-parent partnerships, 59–64. *See also* parental involvement
teacher think-alouds: in comprehension instruction, 212–213
teaching: constructivist principles of, 30–38, 33*f*; evidence-based, 2; explicit vs. implicit, 33–34, 33*f*; learning styles and, 90–91; multifaceted/multilevel, 90–91; performance- vs. learning-oriented, 386–387; of phonics, 87–107; primacy of, 2; reciprocal, 214–215, 225–227, 299–300, 400; systematic, 33*f*, 34–35
Teaching Children to Read (NRP), 4, 351–352
technology. *See* new literacies
test-wiseness, 375, 378–379
Texas: text difficulty standards in, 341, 355–357
Texas Assessment and Standards (TAAS), 358, 359*t*, 361–362

TEXT DIFFICULTY, 337–365; ambiguity surrounding, 360–363; assessments and, 357–359, 359t; criteria for, 342–351, 359–363; critical word factor and, 345–346, 362; decodability and, 343–345; definitions of, 338–339; engagingness and, 343, 363; inconsistent standards for, 360–363; Lexiles and, 341–342, 363; national standards for, 351–353; potential for accuracy and, 343–344; predictability and, 343, 350; readability formulas and, 338, 339–342, 349; recent perspectives on, 342–351; semantic complexity and, 339; state standards for, 353–357, 354*t*; syntactic complexity and, 339; task analysis of, 344–346; in tests vs. texts, 361–363; text leveling and, 346–350, 347*t*, 348t, 362; word frequency and, 344–345

TEXT ELEMENTS BY TASK (TExT), 344–346

TEXT LEVELING, 346–350, 347*t*, 348*t*, 362

TEXT STRUCTURE: comprehension and, 216–218; in content area reading, 192

THINK-ALOUDS: in comprehension instruction, 214–216

TRACKING: high-stakes testing and, 371

TRANSACTIONAL STRATEGY INSTRUCTION, 228–229, 229*f*, 234, 246*t*, 249–252, 253, 300–302; vs. Direct Explanation, 249–250; SAIL program in, 214–215, 228–230, 229*f*, 250–251

TRANSFER EFFECTS: in comprehension instruction, 216, 220, 256–257; in content area reading, 189; fluency and, 179; frames and, 220; text structure and, 216

TRANSFORMATION: in constructivist instruction, 36

TRANSITIONAL STRATEGY INSTRUCTION, 234

TRAVEL-BUDDY PROJECTS, 312

TUTORS, 278

UNSYSTEMATIC INSTRUCTION, 33*f*, 34–35

USING WORKS YOU KNOW, 101–103

V

VIDEO CONFERENCING, 313

VOCABULARY: comprehension and, 224, 293–294, 297

VOCABULARY DEVELOPMENT, 140–165; adept diction in, 145–147; balanced approach in, 142; cognitive-constructivist approach in, 142; context clues in, 143–144, 159; in early intervention programs, 75; explicit instruction for, 156–159; fostering of, 145–159; four-part program for, 142–144; heterogeneity and, 157–158; historical perspective on, 140–141; incremental nature of, 156, 159; individual words in, 142–143; intensive/expressive instruction for, 150–153; interrelated words and, 157; magnitude of task in, 141–142, 158; metalinguistic awareness and, 158–159; multidimensionality and, 156–157, 159; original investigations in, 153–155; polysemy and, 157, 158–159; scaffolding in, 147; spoken vocabulary in, 153–154; television programs in, 153; wide reading in, 142–143; word consciousness in, 144–159. *See also* word consciousness; word hunting in, 147; word learning strategies in, 143–144; word-of-the-day activities in, 146–147; word play in, 147–150; writing activities in, 150–153

VOCABULARY RESEARCH: history and current status of, 140–141

VOLUNTEER TUTORS, 278

VOWEL PLANE, 95

W

WAHYUNI, IBU, 313

WHOLE LANGUAGE APPROACH: phonemic awareness and, 126

WORD CONSCIOUSNESS, 144–159; adept diction and, 145–147; definition of, 144; explicit instruction in, 156–159; fostering of, 145–159; heterogeneity in, 157–158; importance of, 145; incremental nature of, 156; intensive/expressive instruction in, 150–153; interrelationships in, 157; metalinguistic awareness and, 158–159; multidimensionality of, 156–157; original investigations for, 153–155; polysemy and, 157, 158–159; scaffolding and, 147; spoken vocabulary and, 153–154; television programs for, 153; word hunting in, 147; word-of-the-day and, 146–147; word play and, 147–150; writing activities for, 150–153

WORD LEARNING STRATEGIES: in vocabulary instruction, 143–144

WORD MAKING, 399–400

WORD-OF-THE-DAY ACTIVITIES, 146–147

WORD PLAY, 147–150

WORD RECOGNITION: *See also* decoding; comprehension and, 292–294; fluency and, 167, 171, 292–294; stages of, 171–172; visual unit size and, 170–171, 173

WRITING: in content area reading, 199–200; in early intervention programs, 75; in Four Block program, 96–97

WRITING-TO-LEARN STRATEGIES, 199–200

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